

CONTRACT NAS5-32605  
**EOSDIS IV&V**

# **EOS GROUND SYSTEM (EGS) INTEGRATION AND TEST PROGRAM PLAN**

**Baseline**  
(Deliverable 1109)

**August 15, 1996**

**Prepared By:**

**INTERMETRICS**  
6301 Ivy Lane Suite 200  
Greenbelt, MD 20770

**Prepared For:**

**NASA Goddard Space Flight Center**  
Code 505  
Greenbelt, MD 20770

This page intentionally left blank

# **EOS GROUND SYSTEM (EGS) INTEGRATION AND TEST PROGRAM PLAN**

**Baseline**  
(Deliverable 1109)

**August 15, 1996**

Submitted By:

---

Frank Rockwell  
Task Lead

Approved By:

---

Frank Rockwell  
Program Manager

Approved By:

---

Janice K. Smith  
ESDIS Project  
I&T Manager

**INTERMETRICS**  
6301 Ivy Lane Suite 200  
Greenbelt, MD 20770

This page intentionally left blank

## **EXECUTIVE SUMMARY**

This document presents the overall plan for the Earth Observing System (EOS) Ground System (EGS) Integration and Test (I&T) Program. This document supersedes and replaces the EOSDIS Integration, Test and Verification Plan (EITVP), the EGS Integration and Test Plan (EITP), and the ESDIS Test Philosophy Document.

The EGS I&T Program consists of two main efforts: 1) the Confidence Test Program, and 2) the Flight Projects Joint Testing Program. The EGS I&T Program, as described here, is a new approach to the EGS I&T task necessitated by the need to consolidate and streamline testing efforts project wide. The transition from the previous I&T program to the program defined here is discussed in Section 5.4.

The original EGS Version 1 I&T Program is superseded by an initial suite of confidence tests which are a subset of those described in this document -- specifically, those that can be supported by EGS Version 1. Most of the planning effort that occurred during the development of the original Version 1 I&T Plan was directly transferable to the Confidence Test Program.

The Confidence Test Program focuses on demonstrations of key functionality and mission critical requirements, and emphasizes operability. The objective of the overall EGS I&T Program is to demonstrate and certify EGS Mission Readiness as a precursor to Operations Readiness Testing conducted by the Mission Operations Manager and Science Operations Manager. A continuously evolving set of confidence test packages is maintained at the EGS Component, EGS Interface, and EGS System levels. The EGS I&T team leads the development and execution of individual confidence test packages. Confidence test packages include test procedures, test data, and other supporting material, and are designed to exercise the system in its final form. The content of the test packages is specified in Section 5.3. At interim delivery points (component releases and EGS versions), those portions of the package that can be supported by the interim delivery are executed. The confidence test packages also provide a ready source of regression test materials following major changes or upgrades. As noted previously, the initial set of confidence test packages have largely evolved from the EGS Version 1 I&T Plan. The Confidence Test Program builds not only on this planning effort, but on developer I&T efforts as well.

The EGS I&T Program is developed and executed by a set of Integrated Product Teams (IPTs) under the direction of the ESDIS I&T Manager. Each IPT is led by a civil servant supported by the I&T contractor, development organizations, and end-user organizations.

Joint testing efforts have been established with the TRMM, Landsat-7, AM-1 Flight Projects, and the ASTER Instrument Team. Joint tests support flight project and instrument team program requirements and provide valuable opportunities to exercise

EGS capabilities in an operational environment. The role of the EGS I&T team is to provide support to the Flight Projects Joint Testing Program.

It is intended that this document will be periodically updated to reflect the EGS I&T Program as it evolves over time.

## Change Information Page

List of Effective Pages			
Page Number		Issue	
Document History			
Document Number	Status/Issue	Publication Date	CCR Number

This page intentionally left blank



## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY .....</b>	<b>V</b>
<b>1. INTRODUCTION.....</b>	<b>1-1</b>
1.1 Purpose and Scope .....	1-1
1.2 Content.....	1-2
<b>2. Objectives and Philosophy .....</b>	<b>2-1</b>
2.1 Background .....	2-1
2.2 Objectives.....	2-1
2.3 EGS Integration and Test Program Philosophy .....	2-2
<b>3. Confidence Test Program Overview .....</b>	<b>3-1</b>
3.1 EGS Interface Level.....	3-1
3.2 EGS Component Level.....	3-2
3.2.1 EOC Component Confidence Tests .....	3-2
3.2.2 SDP Component Confidence Tests.....	3-3
3.2.3 EDOS Component Confidence Tests.....	3-4
3.2.4 EBnet Component Confidence Tests .....	3-5
3.3 EGS System Level.....	3-5
3.3.1 EGS Confidence Tests .....	3-5
<b>4. Joint Test Program .....</b>	<b>4-1</b>
4.1 AM-I Joint Tests .....	4-1
4.2 TRMM Joint Tests .....	4-3
4.3 Landsat-7 Joint Tests .....	4-3
4.4 ASTER Joint Tests.....	4-5
<b>5. Integration and Test Program Management.....</b>	<b>5-1</b>
5.1 I&T Charter and Organization.....	5-1
5.2 Roles and Responsibilities .....	5-2
5.2.1 Organizations Represented at the TICTOC.....	5-2
5.2.2 Systems Integrated Product Team (SYS-IPT).....	5-4
5.2.3 Flight Systems and Operations Integrated Product Team (FSO-IPT) .....	5-6
5.2.4 Science Systems and Operations Integrated Product Team (SSO-IPT). ....	5-7
5.2.4.1 DAAC Performance Characterizations and DAAC -Unique Tests .....	5-8
5.2.5 EDOS Integrated Product Team (EDOS-IPT).....	5-8
5.2.6 Other Support Group.....	5-8
5.3 EGS I&T Confidence Test Packages.....	5-9
5.3.1 Confidence Test Package Content. ....	5-9
5.3.1.1 Plan/Procedures Folder....	5-10
5.3.1.2 Discrepancy Reports Folder .....	5-12
5.3.1.3 Related CCRs Folder.....	5-12

5.3.1.4 Historical Archive Folder .....	5-12
5.3.1.5 Lessons Learned Folder.....	5-12
5.3.1.6 Execution Cover Sheet.....	5-12
5.3.2 Test Production and Execution Process .....	5-13
5.3.2.1 Confidence Test Package Development Phase.....	5-14
5.3.2.2 Coordination and Scheduling Phase.....	5-14
5.3.2.3 Execution and Reporting Phase.....	5-15
5.4. Transition to the New Approach.....	5-15
<b>6. EGS I&amp;T Program Test Automation .....</b>	<b>6-1</b>
6.1 Overview.....	6-1
6.2 Tooling Inventory .....	6-1
6.3 Tooling Allocation to Confidence Test.....	6-3
<b>7. EGS I&amp;T Program Metrics.....</b>	<b>7-1</b>
7.1 Goals and Development .....	7-1
7.1.1 Process Metrics .....	7-2
7.1.2 Product Metrics .....	7-5
7.2 Collection and Tracking .....	7-7
7.3 Analysis and Reporting .....	7-8
<b>Appendix A - Requirements Verification Matrix .....</b>	<b>A-1</b>
<b>Appendix B - Sample Data Collection Forms.....</b>	<b>B-1</b>
<b>Appendix C - Acronyms and Abbreviations.....</b>	<b>C-1</b>

## TABLE OF EXHIBITS

EXHIBIT 1-1: EOSDIS Test Flow.....	1-1
EXHIBIT 2-1: Comparison of Previous and Current I&T Approaches.....	2-3
EXHIBIT 3-1: Confidence Test Buildup.....	3-7
EXHIBIT 4-1: Joint TRMM / ESDIS Integration Tests.....	4-3
EXHIBIT 4-2: Joint Landsat-7 / ESDIS Integration Tests.....	4-4
EXHIBIT 4-3: Joint ASTER EGS Interface Tests .....	4-61
EXHIBIT 4-4: Joint ASTER EGS System Tests.....	4-7
EXHIBIT 4-5: ASTER EGS Joint Operations Tests.....	4-7
EXHIBIT 5-1: EGS I&T Organizational Structure .....	5-2
EXHIBIT 5-2: Test Package Structure .....	5-10
EXHIBIT 5-3: Procedures Format .....	5-12

*EGS Integration and Test Program Plan*

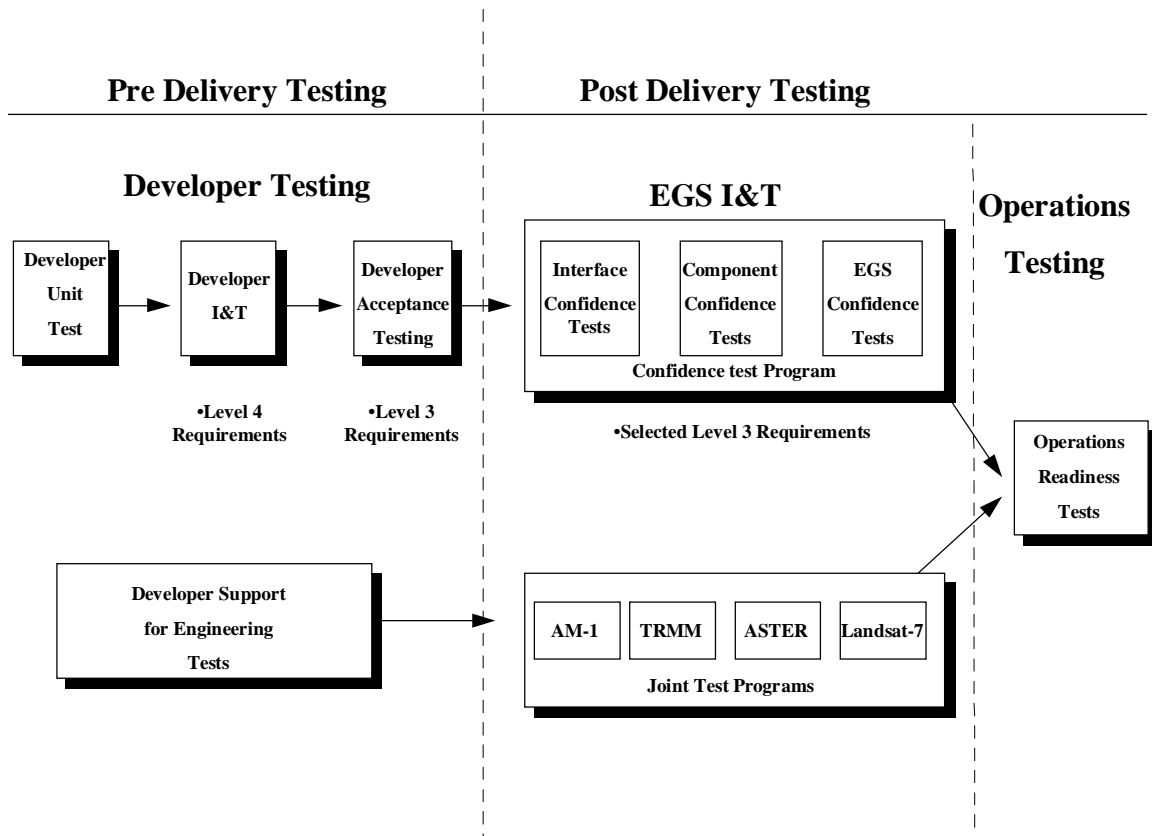
EXHIBIT 5-4: Confidence Test Production Process.....	5-13
EXHIBIT 5-5: Confidence Test Package Buildup from the Version 1 I&T Plan.....	5-16
EXHIBIT 6-1: EGS I&T Program Tools.....	6-1
EXHIBIT 6-2: Tooling Allocation to Confidence Test Packages .....	6-3
EXHIBIT 7-1: EGS I&T Program Metrics Process .....	7-2
EXHIBIT 7-2: Process Metrics.....	7-2
EXHIBIT 7-3: Product Metrics.....	7-5
EXHIBIT 7-4: EGS I&T Program Data Collection Forms.....	7-8

This page intentionally left blank

# 1. INTRODUCTION

## 1.1 Purpose and Scope

The purpose of this document is to provide the top level guidance for the EGS I&T Program. This document defines the objectives of the I&T Program, identifies the set of confidence tests supporting that program, specifies confidence test package content, establishes a mechanism for the execution of joint tests, and discusses the management and administration of the I&T Program. Exhibit 1-1 shows the sequence of EOSDIS testing from Developer Testing to Operations Testing.



**EXHIBIT 1-1: EOSDIS Test Flow**

## **1.2 Content**

The document is organized into seven sections and three appendices:

- Section 1 provides introductory material
- Section 2 defines the objectives and philosophy guiding the program
- Section 3 provides an initial overview of the Confidence Test Program, identifying the initial set of confidence tests and the test environment
- Section 4 identifies the currently active joint tests and establishes the mechanism for the identification and performance of future joint test efforts
- Section 5 discusses program management, including transition from the existing EGS I&T Program to the new program
- Section 6 provides an overview of EGS I&T test automation
- Section 7 discusses the EGS I&T Program metrics
- Appendix A provides a requirements verification matrix
- Appendix B provides sample data collection forms
- Appendix C provides acronyms and abbreviations

## 2. Objectives and Philosophy

### 2.1 Background

The redefinition of the EGS I&T Program was driven by two major issues:

- Several different test organizations were performing overlapping activities and it was difficult to determine what distinct value was added at each of the different levels of the test program
- Concerns were expressed that the EGS I&T Program, based on tests driven by Level 3 requirements, may not have adequately addressed the important EGS issue: “Is the EGS ready to support Operations Readiness Testing - for Tropical Rainfall Measuring Mission (TRMM), Landsat-7, and AM-1 in the near term, and for the follow-on EOS missions in the future?”

To address these issues, a test streamlining effort was implemented, dividing test activities into “pre-delivery” and “post-delivery” phases:

- Pre-delivery testing, conducted by the development organizations, focuses on requirements verification
- Post-delivery testing, led by the EGS I&T contractor, focuses on the demonstration of key functions in the operational environment. Formal tracking of requirements verification is limited to mission critical requirements and a subset of the interface and processing requirements that are only exercised by the developer I&T through the use of simulators

The program described in this document was developed to guide post-delivery testing prior to Operations Readiness Testing.

### 2.2 Objectives

The overall objective of the EGS I&T Program is to integrate the various EOSDIS components into the EGS, validate the inter-component and external EGS interfaces, and provide, on a continuing basis, a credible demonstration that the EGS can reliably support end-to-end system functionality leading to operations. In support of that objective, the EGS I&T team supports joint tests with the Flight Projects and leads the development and execution of a series of pre-packaged confidence tests at the interface, component, and EGS levels to:

- Conduct interface tests at initial delivery and as regression tests
- Exercise component threads prior to integration into EGS

- Exercise the primary EGS system level functions
- Regression test components after new releases or substantive modifications

### **2.3 EGS Integration and Test Program Philosophy**

The EGS I&T Program focuses on two aspects. One aspect is the Confidence Test Program and the other is the Joint Test Program.

Requirements verification is conducted during pre-delivery testing, which is performed by the developer organizations. The Confidence Test Program will continue to trace and track verification of mission critical requirements through execution of confidence tests. Mission critical requirements are identified in the EOSDIS Core System (ECS) Functional and Performance Requirements (F&PR) data base (requirements by release class in the Requirements and Traceability Management (RTM) tool). The I&T team will identify a subset of EOS Data and Operations System (EDOS) F&PRs and EOSDIS Backbone Network (EBnet) Level 2 requirements that meet the mission critical criteria used by the ECS project and include these as requirements tracked by the Confidence Test Program.

However, the main drivers for the confidence test packages are not these requirements. The confidence test package design is driven by operational scenarios and related key functions. At a minimum, key functions that cover mission critical requirements are identified from EGS design specification “function” descriptions and interface control documents (ICDs). Key functions are identified by user and developer members of the IPTs. The Operational scenarios are identified from input received by the Distributed Active Archive Center (DAAC)/Science users, Flight Projects, and the development organizations.

The Confidence Test Program approach is based on a single high level plan and evolving test packages which will incorporate new information, functionality, and lessons learned from previous executions. As confidence test packages mature, their execution may be turned over to the cognizant maintenance and operations (M&O) organizations for regression testing following system upgrades. The Confidence Test Program evolves naturally with MTPE, EOS, and EOSDIS. As operational concepts mature, new capabilities are added, and as new missions are deployed, new confidence test packages are developed and existing ones are modified to meet current needs. The previous I&T approach was based upon discrete deliverables of plans and procedures for each EGS Version. The differences between the two approaches are summarized in Exhibit 2-1.



Previous I&T Approach	Current I&T Approach
Test planning driven by a large subset of Level 3 Requirements	Test planning driven by demonstrations of critical functionality and operational scenarios. Mapping to mission critical requirements.
I&T plan and procedures published for EGS Version.	One program plan. Confidence Test Packages continuously evolve to match fully delivered system capabilities. Portions supported by current system are executed.
No explicit regression testing mechanism.	Confidence test packages modularized and designed to naturally support regression testing.
Entire program carried out by a single team.	Program responsibility distributed to the Integrated Product Teams.

**EXHIBIT 2-1: Comparison of Previous and Current I&T Approaches**

This page intentionally left blank

### 3. Confidence Test Program Overview

Confidence test packages are developed for three different levels of testing:

- EGS Interface Level
- EGS Component Level
- EGS System Level

#### 3.1 EGS Interface Level

In general, interface confidence tests exercise bulk data (mission data) flow at nominal and maximum rates as well as the ability to transfer and respond to all message data types. Error and exception handling is exercised for custom protocols (Data Availability Notice (DAN)/Data Availability Acknowledgment (DAA) protocols, for example), but not for Commercial Off-The-Shelf (COTS)/standard protocols supporting the interface (such as, Transmission Control Protocol/Internet Protocol (TCP/IP), X.25). In general, interface confidence tests are driven by the corresponding Interface Control Documents (ICDs). Unique interface features and the mechanisms for testing them are identified in the corresponding confidence test packages. The initial set of interface confidence tests are defined as follows:

##### Interface Confidence Tests

DAAC - SCF Interface Confidence Test	(ICT1)
EOC - EDOS Interface Confidence Test	(ICT2)
DAAC - EDOS Interface Confidence Test	(ICT3)
DAAC - ADC Interface Confidence Test	(ICT4)
ECS - GSFC DAAC Interface Confidence Test	(ICT5)
DAAC - SDPF Interface Confidence Test	(ICT6)*
DAAC - TSDIS Interface Confidence Test	(ICT7)
ECS - Landsat 7 Interface Confidence Test	(ICT8)
EOC - NCC Interface Confidence Test	(ICT9)
EOC - FDF Interface Confidence Test	(ICT10)
EDOS - ASTER GDS Interface Confidence Test	(ICT11)
DAAC - ASTER GDS Interface Confidence Test	(ICT12)
EOC - ICC/IST Interface Confidence Test	(ICT13)
EOC - ASTER GDS Interface Confidence Test	(ICT14)

\*ICT6 reuses the existing GDS I&T #3, Science Data Processing Test, and is used as a place holder for possible future EGS I&T unique purposes.

## **3.2 EGS Component Level**

For the purposes of organizing the Confidence Test Program, the ECS Component is divided into an EOS Operations Center (EOC) component and a Science Data Processing (SDP) component. The requirements for component level confidence testing of the EDOS and EBnet components are met by acceptance testing activities administered by Goddard Space Flight Center (GSFC) codes 510 and 540, respectively.

### **3.2.1 EOC Component Confidence Tests**

EOC component confidence tests are administered by the Flight Systems and Operations Integrated Product Team (FSO-IPT). These tests exercise the key functions for real-time spacecraft and instrument command and control, mission planning and scheduling, telemetry and spacecraft analysis, and EOC Resource Management. These tests provide a foundation for EOC participation in EGS level confidence tests.

**EOC1 Telemetry Processing Confidence Test** - The EOC demonstrates the ability to capture, decommutate, limit check, engineering unit (EU) convert and display all data rates and formats of spacecraft telemetry. The ability to construct and operate user defined telemetry displays is verified. The test may be executed with increasingly high fidelity telemetry data sources such as EOSDIS Test System (ETS), Spacecraft Simulator (SSIM), and the spacecraft itself.

**EOC2 Command Processing Confidence Test** - The EOC conducts real-time and stored command transmission at all rates and formats to the prime and back-up command interface units. Proper implementation of Consultative Committee for Space Data Systems (CCSDS) commanding protocols is verified. The inhibition of critical and hazardous commanding is verified. The EOC uplinks flight software loads, table loads and instrument micro-processor loads. Following onboard computer (OBC) loads, the EOC conducts OBC memory dumps and ground master image compares.

**EOC3 Planning and Scheduling Confidence Test** - The EOC produces command loads and a ground script from a standard ephemeris file, a set of housekeeping activity requests, and a set of instrument activity requests from multiple instruments. The EOC planning and scheduling team identifies and resolves resource conflicts and checks for constraint violations. The EOC planning and scheduling team identifies necessary space network (SN) contact support, creates and submits service requests to Network Control Center (NCC) and processes schedules returned by the NCC into the flight and ground timelines.

**EOC4 Telemetry Logging and Analysis Confidence Test** - The EOC concurrently captures and records housekeeping and, health and safety telemetry streams. Telemetry data sets are created and stored to the local telemetry archive. The

analysis sub-system demonstrates the ability to select, plot, and statistically analyze selected parameters and sets of parameters.

**EOC5 Resource Management Confidence Test** - The Flight Operations Team (FOT) operator demonstrates the ability to shift displays between various rooms and pages. The ability to assign key functions such as command activity controller and ground controller to various workstations and the ability to protect privileged operations, such as commanding, is demonstrated. The FOT configures and de-configures logical processing strings and demonstrates the ability to failover to redundant or standby elements.

### **3.2.2 SDP Component Confidence Tests**

The SDP component confidence tests are administered by the Science Systems and Operations Integrated Product Team (SSO-IPT). These tests exercise the data ingest into the ECS system, data processing, data storage, data pulled by the science users and the EGS security functions.

**SDP1 Data Ingest and Archive Confidence Test** - At the DAAC, the following functions (as applicable to that DAAC), are performed:

- Ingest Level 0 data from EDOS and stage for production. Level 0 data includes Expedited Data Sets (EDS) and Production Data Sets (PDS). Conduct cross-DAAC ingests and stage for production.
- Ingest and archive TRMM, National Oceanic Atmospheric Administration (NOAA), Data Assimilation Office (DAO), and Affiliated Data Center (ADC) data sets and verify metadata updates.
- Ingest and archive ancillary data from SDPF and the Flight Dynamics Facility (FDF).
- Verify data backup, failover, and fault detection in relation to data ingest and archive.

**SDP2 Science Data Production Confidence Test** - At each DAAC, the science operations team plans, schedules, and executes a representative daily production run, including re-processing requests, using AutoSys with dependencies. The science operations team conducts quality assurance (QA) checks on completed data, and the investigator team performs remote QA from the Science Computing Facility (SCF). The information management service (IMS) is queried to verify proper metadata generation. Proper end user notification is verified. This test also exercises emergency procedures during data production (e.g., What happens to typical production when resources become unavailable?).

**SDP3 Data Access and Transfer Confidence Test** - The ability to provide science users with effective data access is demonstrated in four separate categories: (1)

instrument team data, (2) National Aeronautics and Space Administration (NASA) scientist data, (3) Non-NASA scientist data, and (4) Version 0 data. These tests validate directory, guide, and inventory searches for data sets that are typical for each of the separate categories. Delivery of data is accepted both electronically and on media.

Instrument team data includes ancillary data sets (e.g., engineering data) that may be needed to assess the health and safety of a scientific instrument. NASA scientist data includes some large data sets for major projects that will primarily come from the DAAC at their own (local) NASA center. Non-NASA scientist data includes data sets of a variety of sizes, from multiple DAACs. It also includes browse images that might be used by K-12 teachers and students.

**SDP4 Standing Product Order Confidence Test** - User Subscriptions for Standing Product orders are entered into the system and delivery of the requested data will be verified. Delivery of data will be accepted both electronically and on media. Contingency conditions for standing orders and conflict resolution are also verified.

**SDP5 V0 Interoperability Confidence Test** - Conduct directory, guide, inventory, and browse queries and data retrievals from V0 archives to demonstrate Interoperability.

**SDP6 Data Manipulation Confidence Test** - The Data Manipulation services that are available in the current release are exercised to verify functionality. These could include: (1) format conversion of EOS data, (2) subsetting, (3) compression, (4) data transformation, and (5) subsampling. This functionality is exercised for each category as appropriate.

**SDP7 Security Confidence Test** - This series of tests verifies the security functions of the EGS. User access to data will be verified to ensure no deliberate or unintentional corruption to data can occur. Other security issues, such as virus detection, audit trails, recovery from security violations, responding to security compromises, and security safeguards are all exercised.

### **3.2.3 EDOS Component Confidence Tests**

The test program for the EDOS is planned and administered within GSFC code 510. The ESDIS I&T organization (GSFC code 505) maintains a representative on the EDOS IPT to gain insight into the EDOS test program, to help select tests from the EDOS test program that meet the needs and objectives of the EGS Confidence Test program, and to coordinate EDOS support to EGS Interface and EGS System level confidence tests. No explicit EGS I&T developed EDOS confidence tests are currently planned.

### **3.2.4 EBnet Component Confidence Tests**

The test program for the EBnet is planned and administered within GSFC code 540. The EBnet Project maintains representatives on the EGS IPTs to provide insight into the EBnet test program, to support the development of the EGS Confidence Test Program, and to coordinate EBnet support to EGS interface and EGS system level confidence tests. No explicit EGS I&T developed EBnet confidence tests are currently planned.

## **3.3 EGS System Level**

These tests exercise end-to-end functionality in preparation for Operations Readiness Testing.

### **3.3.1 EGS Confidence Tests**

**EGS1 AM-1 Spacecraft Operations Confidence Test** - The Mission Planning and Scheduling Confidence Test (EOC3) is executed to produce a nominal 24 hour mission timeline, ground script, supporting command loads and SN scheduling requests. The SN scheduling requests are iterated with the NCC to produce a conflict free Tracking and Data Relay Satellite System (TDRSS) schedule. The mission timeline is then executed through the SN using the spacecraft simulator communicating via the Radio Frequency Simulation Operation Center (RFSOC).

**EGS2 AM-1 Contingency Mode Operations Confidence Test** - Contingency site contacts will be scheduled through the NCC. The EOC will conduct simulated commanding and telemetry processing operations with the Deep Space Network (DSN), ground network (GN) and Wallops Orbital Tracking System (WOTS) sites at each data rate and format supported by that site.

**EGS3 AM-1 Daily Operations Confidence Test** - The AM-1 Spacecraft Operations Confidence Test (EGS1) and three SDP Component Confidence Tests (SDP1, SDP2, and SDP3) will be conducted simultaneously, evaluating the effects on network traffic and Information Management Service (IMS)/System Monitoring and coordination Center (SMC) loading. The successful completion of EGS3 and EGS6 represents certification that the EGS is ready to support AM-1 Operations Readiness Testing.

**EGS4 EGS - TRMM Interoperability Confidence Test** - ECS (GSFC and LaRC DAACs) will ingest and archive representative TRMM products from TRMM Science Data and Information System (TSDIS) and SDPF. Ancillary data from the SDPF will be ingested and archived at the LaRC DAAC. TRMM products will be provided to TSDIS from the DAACs for re-processing and directly to TRMM science users. The successful completion of EGS4 represents certification that the EGS is ready to support TRMM Operations Readiness Testing.

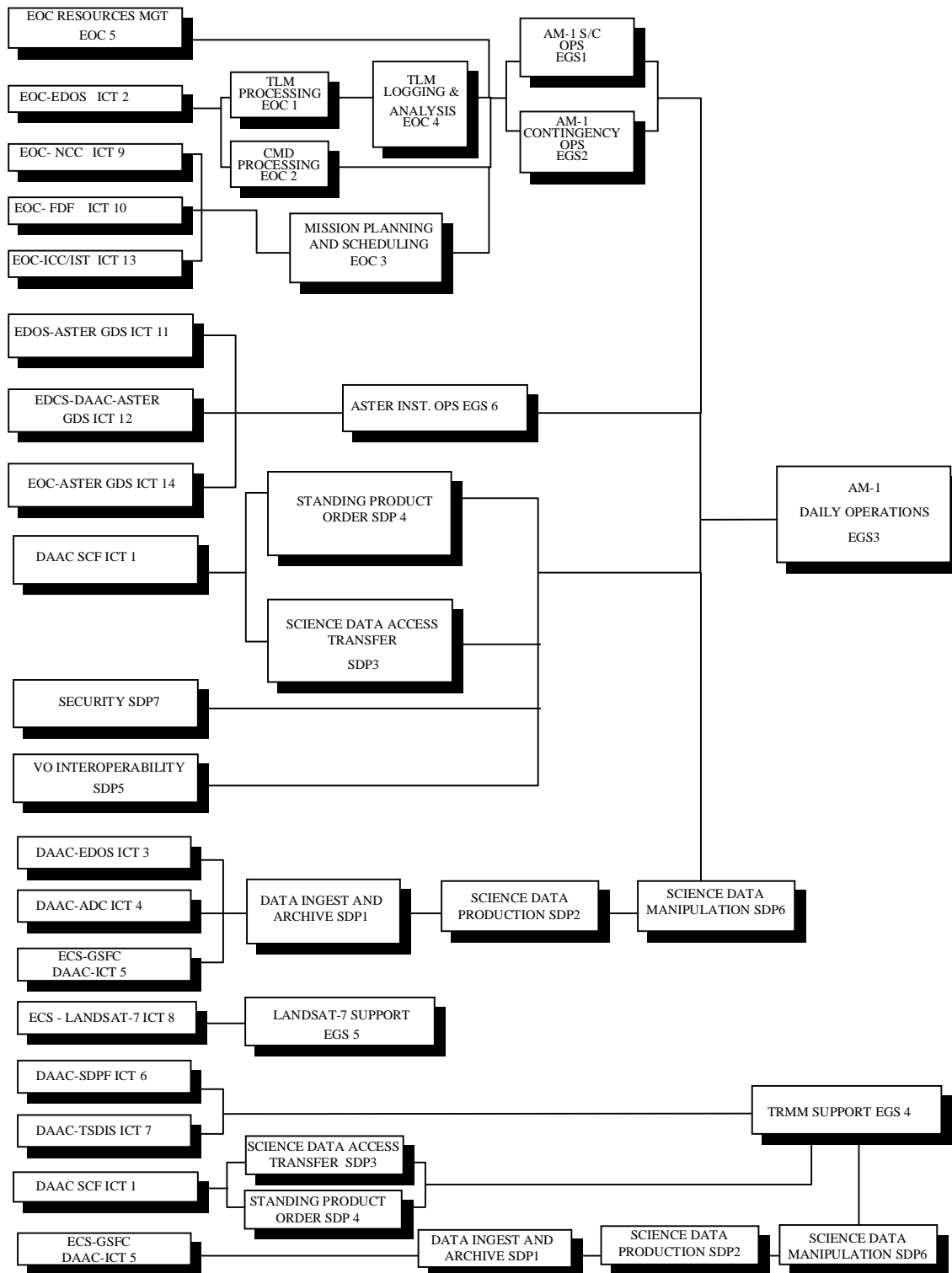
**EGS5 EGS - Landsat-7 Interoperability Confidence Test** - Representative Landsat-7 products and metadata from the Landsat 7 Processing System (LPS) will be ingested and archived at the EROS Data Center (EDC) DAAC. The successful completion of EGS5 represents certification that the EGS is ready to support Landsat-7 Operations Readiness Testing.

**EGS6 ASTER Instrument Operations Confidence Test** - The Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) ground data system (GDS) will submit a nominal baseline activity profile and a set of ad hoc activities to the EOC for integration into the mission timeline. Supporting command loads and ground scripts will be generated. The timeline will be executed and level 0 data returned from EDOS to the EDC DAAC. ASTER Expedited Data Sets will be sent to GSFC DAAC and made available to ASTER GDS. The ASTER SDP receives PDSs on tape from EDOS. Real-time commanding of ASTER from the ASTER GDS via the EOC will be exercised. Higher level data products on physical media will be returned from the EDC DAAC to the ASTER Instrument Team (IT).

The buildup of the confidence tests to the point of AM-1 operations readiness support within the context of the entire EGS Confidence Test Program is shown in Exhibit 3-1.



## EGS Integration and Test Program Plan



### EXHIBIT 3-1: Confidence Test Buildup

This page intentionally left blank

## **4. Joint Test Program**

One of the primary reasons for the new approach to the I&T program is to eliminate duplication in the I&T effort by combining, where possible, test efforts initiated and managed by different organizations with overlapping objectives. Joint tests will be coordinated with the AM-1, TRMM, and Landsat-7 Flight Projects, as well as the ASTER Instrument Project, and will also be established for future EOS/MTPE missions supported by EOSDIS.

Other organizations may have test efforts underway that also meet the objectives of the EGS I&T Program. These organizations include SSI&T and the V0 Data Migration Verification Project performed by Hughes Information Technology Systems (HITS) under the direction of the Science Operations Manager.

Joint tests with the EOS/MTPE Flight and Instrument Projects provide a valuable opportunity for maximizing EGS integration efficiency, while supporting the project's pre-launch system verification requirements.

### **4.1 AM-1 Joint Tests**

The Joint Test Program with, and managed by, the AM-1 mission currently includes three EOC Compatibility Tests (ECTs) and a full system end-to-end test (ETE) with the AM-1 spacecraft.

#### **EOC Compatibility Test 1 (ECT1)**

The first EOC Compatibility Test (ECT1) is a simple demonstration of the ability of the EOC to generate commands and process telemetry for the AM-1 spacecraft. This test is planned to be run between the EOC at GSFC and the SCS at Valley Forge, Pennsylvania. A direct link (hard-line) between the two facilities will be used.

#### **EOC Compatibility Test 2 (ECT2)**

ECT2 is a comprehensive EOS command and telemetry demonstration. Participants include the EOC at GSFC, EDOS V3, SN, and the SCS at Valley Forge, Pennsylvania. This will be an RF test run via TDRSS. Command data will flow from the EOC to EDOS to TDRSS and then to a satellite antenna at the Valley Forge Facility, with telemetry data following the reverse path.

### **EOC Compatibility Test 3 (ECT3)**

ECT3 extends ECT2 to spacecraft command and control through the contingency sites as well as through the SN. Science data will also be delivered to the DAACs via EDOS for production, archiving, and access by the users. Instrument command and control via the EOC is exercised with the ASTER GDS and the other instrument ISTs. The EOC- FDF interface is also exercised in ECT3.

### **AM-1 End-to-End Test (ETE)**

The ETE Test extends ECT3 to test full system compatibility, including the planning and scheduling process, and ingest of ancillary data from NOAA.

## 4.2 TRMM Joint Tests

TRMM integration efforts being supported jointly by the TRMM Project and the ESDIS Project are shown in Exhibit 4-1.

Confidence Test Suite	Test Description	Participants
ICT6: SDPF-LaRC DAAC Interface (This is a reuse of the same test identified as I&T #3 from the GDS)	Verify CERES L0 and Quick Look data sets and ancillary data can be transferred from SDPF to LaRC DAAC	Lead: Mission Readiness Test Team (MRTT) Support: EGS I&T SI&T, SDPF, LaRC DAAC, EBnet
ICT7: DACC-TSDIS Interface	Verify TRMM instrument data can be transferred.	Lead: EGS I&T SI&T, TSDIS I&T Support: GSFC DAAC, EBnet
EGS4: TRMM Support Confidence Test	Verify the ground system can function from SDPF to the TSUs	Lead: EGS I&T SI&T, TSDIS I&T Support: SDPF, GSFC, EBnet, LaRC DAACs
EGS4: TRMM Mission Simulation #2	Checkout operations procedures with operational systems and simulate mission sequences	Lead: MRTT Support: GSFC DAAC, Selected TSUs, EBnet

**EXHIBIT 4-1: Joint TRMM / ESDIS Integration Tests**

### 4.3 Landsat-7 Joint Tests

Landsat 7 Integration efforts being supported jointly by the Landsat 7 Project and the ESDIS Project are shown in Exhibit 4-2.

Confidence Test Suite	Test Description	Participant
ICT8: LPS-LPDAAAC Interface Some of the objectives of these tests are same as those of Landsat-7 I&T #4.1 [LPS08, LPS10, LPS15, LPS16, and LPDAAC01]	Verify ECS Release A interface with Landsat-7 Processing System (LPS), which includes FDDI, Router connections and Landsat-7 Data transmission to and from ECS at EDF	Lead: EGS I&T Support: LPS, EBnet, ECS at EDF
EGS5: Landsat 7 Support Confidence Test. Some of the objectives of these tests are same as those of Landsat-7 I&T #4.1 [LPS08, LPS10, LPS15, LPS16, and LPDAAC01]  This test will validate the EGS V1 -Landsat-7 interface baseline	<ul style="list-style-type: none"> <li>• Verify ability of LPS to interface with the ECS to transfer messages, such as DAN, DAA and DDA</li> <li>• Verify ability of the LPS to interface with the ECS to transfer LOR data using LOR test data</li> <li>• Verify ability of the LPS to interface with the ECS to transfer LOR inventory metadata using test data</li> <li>• Verify ability of the LPS to interface with the ECS to transfer LOR browse data using test data</li> </ul>	Lead: EGS I&T Support: LPS, EBnet, ECS at EDF

**EXHIBIT 4-2: Joint Landsat-7 / ESDIS Integration Tests**

#### 4.4 ASTER Joint Tests

The ASTER instrument and Ground Data System (GDS) are a complex system requiring extra attention in order to be successfully integrated with the EGS. This effort is additionally complicated by the need to work with a geographically distant International Partner (IP). A Joint Test Program has been established between the ASTER Project and EGS I&T to support this effort. ASTER's data and control is handled differently than the other four instruments and unique joint tests with the ASTER GDS are required to ensure adequate testing of the ASTER system interface to the EGS. An additional factor affecting joint testing is the parallel development of the ASTER GDS and the EGS I&T Program. An ASTER GDS to EGS Overall Test Agreement is still being negotiated. For current planning purposes, the following details are assumed.

System Integration between the ASTER GDS and EGS is conducted in a series of phased, incremental tests on delivered EGS and GDS components. These tests are intended to exercise system components, and to confirm that relevant interfaces and end-to-end system performance meet mission requirements. Exhibits 4-3, 4-4, and 4-5 show potential joint tests, their objectives, and the respective ASTER and EGS test titles for interface, EGS system level, and operations tests, respectively. Engineering Tests (interface compatibility & functionality), EGS I&T tests (confidence tests), Science Software Integration and Test (integrate Level 1) and Operations Readiness Tests (including simulations and end-to-end tests) are all planned.

Potential Joint Test	Objectives	EGS I&T Designation
ASTER SCF - ECS EDC DAAC	<ul style="list-style-type: none"> <li>• Algorithms</li> <li>• SCF Interactions</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT1</li> <li>• EGS Version 1 &amp; Version 2</li> </ul>
ECS SMC - ASTER GDS	<ul style="list-style-type: none"> <li>• System &amp; Network Mgmt</li> <li>• Monitoring &amp; coordination</li> </ul>	<ul style="list-style-type: none"> <li>• EGS Test TBD</li> <li>• EGS Version 2</li> </ul>
ASTER GDS SDP - ECS EDC DAAC	<ul style="list-style-type: none"> <li>• Level 1 Data via media</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT12</li> <li>• EGS Version 2</li> </ul>
EDOS - ASTER GDS SDP	<ul style="list-style-type: none"> <li>• Level 0 Data via media</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT11</li> <li>• EGS Version 2</li> </ul>
EDOS - ASTER ICC	<ul style="list-style-type: none"> <li>• EDUs</li> <li>• CODAs</li> <li>• SCS Reports</li> <li>• Service Requests</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT11</li> <li>• EGS Version 2</li> </ul>
EDOS - EOC & AOS/ICC	<ul style="list-style-type: none"> <li>• H/K telemetry</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT12</li> <li>• EGS ICT14</li> <li>• EGS Version 1 &amp; Version 2</li> </ul>

Potential Joint Test	Objectives	EGS I&T Designation
ECS SDP - ASTER GDS SDP & AOS	<ul style="list-style-type: none"> <li>• Interoperability Search &amp; Request</li> <li>• User Product Requests &amp; Status</li> <li>• User Data Products media</li> <li>• DARs to ASTER GDS</li> <li>• DAR status to ECS</li> <li>• DAR Database Exchange</li> <li>• LTIP &amp; LTSP</li> </ul>	<ul style="list-style-type: none"> <li>• EGS SDP3</li> <li>• EGS Version 2</li> </ul>
ECS GSFC DAAC - ASTER GDS SDP & AOS	<ul style="list-style-type: none"> <li>• ASTER EDSs</li> <li>• NOAA data to GDS AOS</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT3</li> <li>• EGS Version 2</li> </ul>
EOC - ASTER AOS/ICC	<ul style="list-style-type: none"> <li>• P&amp;S</li> <li>• ASTER Instrument commands</li> <li>• Command &amp; telemetry status</li> <li>• ECS IST toolkit</li> </ul>	<ul style="list-style-type: none"> <li>• EGS ICT13</li> <li>• EGS Version 1 (limited by ECS Release A functionality)</li> <li>• EGS Version 2 (will test all objectives)</li> </ul>

**EXHIBIT 4-3: Joint ASTER EGS Interface Tests**



Potential Joint Test	Objectives	ECS I&T Designation
AM-1 ECT 2 Mission Integration	<ul style="list-style-type: none"> <li>• Spacecraft SN test with all command &amp; telemetry</li> <li>• Memory loads</li> <li>• SSR dumps</li> </ul>	<ul style="list-style-type: none"> <li>• ECT 2</li> <li>• EGS Version 1 (ASTER GDS AOS/ICC support is optional)</li> </ul>
AM-1/Landsat-7 EGS Version 1 Baseline Test	<ul style="list-style-type: none"> <li>• Limited test of EGS components available for early interface testing in support of AM-1</li> </ul>	<ul style="list-style-type: none"> <li>• EGS3</li> <li>• EGS Version 1</li> </ul>
AM-1 ECT 3 Mission Integration	<ul style="list-style-type: none"> <li>• Spacecraft SN test with CMD, TLM, loads/dumps, and science data</li> </ul>	<ul style="list-style-type: none"> <li>• ECT 3</li> <li>• EGS Version 2 (ASTER GDS AOS/ICC support is required)</li> </ul>
AM-1/Landsat-7 EGS Version 2 Baseline Test	<ul style="list-style-type: none"> <li>• Full test of EGS components</li> </ul>	<ul style="list-style-type: none"> <li>• EGS3</li> <li>• EGS Version 2</li> </ul>

**EXHIBIT 4-4: ASTER EGS Joint Systems Tests**

Potential Joint Test	Objectives	ECS I&T Designation
AM-1 End-to-End (ETE)	<ul style="list-style-type: none"> <li>• ETE system compatibility of operational systems from S/C to users</li> <li>• Checkout backup command and control</li> <li>• Part of AM-1 100 hour test Comprehensive Performance Test (CPT)</li> </ul>	<ul style="list-style-type: none"> <li>• EGS3</li> <li>• EGS Version 2</li> </ul>

**EXHIBIT 4-5: ASTER EGS Joint Operations Tests**

This page intentionally left blank

## **5. Integration and Test Program Management**

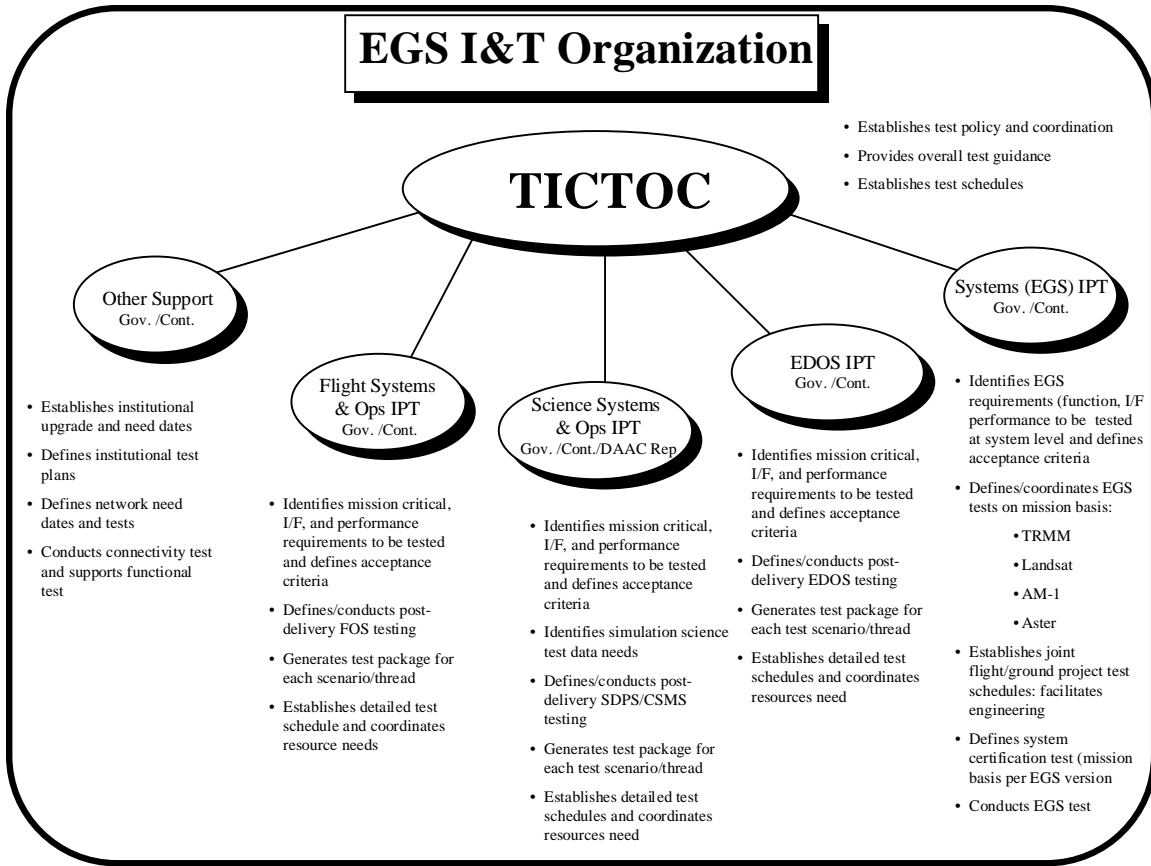
### **5.1 I&T Charter and Organization**

#### **Charter**

The ESDIS I&T Team is responsible for integrating the various components of the EGS into a functioning end-to-end ground system that is ready to be transitioned to the Flight Operations and Science Operations teams, to support Operations Readiness Test activities. EGS I&T activities are conducted on a continuing basis as the EOSDIS evolves to assimilate new technology and to support new missions. To accomplish this, the EGS I&T team executes the EGS Confidence Test Program and supports the Joint Test Programs.

#### **Organization**

The EGS I&T Program is led by the ESDIS I&T Manager. The ESDIS I&T Manager chairs the Test Integration & Certification Test Oversight Committee (TICTOC), which oversees all EGS I&T activities. Supporting the TICTOC are Network and Institutional elements, and four EGS I&T Integrated Product Teams (IPTs). The EGS I&T IPTs are led by a NASA civil servant and include members from the EGS I&T contractor, the developers, and end user (M&O, Science, and Instrument Team) organizations. This organizational structure is illustrated in Exhibit 5-1.



**EXHIBIT 5-1: EGS I&T Organizational Structure**

## 5.2 Roles and Responsibilities

### 5.2.1 Organizations Represented at the TICTOC

The I&T effort is supported by several organizations coordinated by the ESDIS Project I&T Manager, ESDIS I&T staff, and contractor support from Intermetrics and CSC. At the highest level, the mechanism for coordinating I&T activities is the TICTOC. The TICTOC is currently meeting bi-weekly. The roles and responsibilities of the organizations and individuals supporting the I&T effort are discussed below.

**ESDIS Project I&T staff** - The ESDIS I&T Manager, supported by the ECS Integration and Acceptance Test Manager and the TRMM Mission Coordinator, provides the overall direction for the I&T effort and is the advocate to the EOSDIS Project. The ESDIS I&T

Manager will present I&T issues and resolves resource allocation and scheduling conflicts at the Project level (i.e., civil servant to civil servant).

**Intermetrics** - Intermetrics led contractor team is the lead contractor in the EGS I&T Program. The EGS I&T contractor will be responsible (via the IPT teams) for the development of test packages and detailed schedules, the coordination of test execution, and the reporting of test results, including the maintenance of the requirements verification matrix database. The I&T contractor will provide EGS I&T coordination at the contractor-to-contractor level.

**Computer Sciences Corporation (CSC)** - CSC, under the CNMOS contract, will provide support services to the TICTOC and other tasks such as DR Tracking, level 3 I&T schedule maintenance, and DMR development support, as directed by the ESDIS I&T Manager.

**ECS Project (GSFC 505/HITS)** - The ECS project will keep EGS I&T informed of ECS development progress, problems, issues and schedules, and provide review and comment on integration test plans, procedures and reports. ECS developers will provide personnel support, as negotiated, for EGS I&T testing and engineering tests with other EOSDIS elements.

**EDOS Project (GSFC 510/TRW)** - The EDOS project will keep EGS I&T informed of EDOS development progress, problems, issues and schedules, and provide review and comment on integration test plans, procedures and reports. EDOS developers will provide personnel support, as negotiated, for EGS I&T testing and engineering tests with other EOSDIS elements. EDOS also performs component tests which satisfy EGS I&T EDOS related confidence test requirements.

**EBnet Project (GSFC 540)** - The EBnet project will keep EGS I&T informed of EBnet project progress, problems, issues and schedules, and provide review and comment on integration test plans, procedures and reports. The EBnet project will provide engineering support, as negotiated, for EGS I&T testing and engineering tests with other EOSDIS elements. EBnet also performs connectivity tests between various EGS elements supported by EBnet.

**EOSDIS Test System (ETS) Project (GSFC 515/CNMOS)** - ETS will keep the team informed of ETS development progress, problems, issues and schedules. ETS will provide technical support, as may be required, to resolve ETS problems occurring during testing.

**DAACs** - The DAACs, through the DAAC Managers and DAAC Systems Engineers, will support the I&T effort by providing technical support, including review and comment to the development of test plans and procedures. The DAAC M&O staffs will provide operator support, as negotiated, for EGS confidence testing. The DAACs will be represented locally on the TICTOC by the EOSDIS Science Operations Manager and their staff. Working level technical contacts will be maintained directly between the DAAC Systems Engineers and the EGS I&T contractor through the IPTs.

**ECS M&O (GSFC 510 / Lockheed Martin / HITS)** - The ECS M&O organization, including the AM-1 flight operations team, will provide technical review, input, and

comment to EGS I&T test plans, procedures, and reports. M&O will provide ECS operations support for EGS confidence testing.

**EDOS M&O (GSFC 510 / ATSC)** - The EDOS M&O organization will provide technical review, input, and comment to I&T test plans, procedures and reports. EDOS M&O will provide EDOS operations support during I&T testing.

**TRMM Project** - The TRMM project will keep the team informed of TRMM flight and ground system development progress, problems, issues and schedules, and provide review and comment on TRMM related integration test plans, procedures and reports. The TRMM project and EGS I&T contractor will work together to develop joint tests whenever possible to non-redundantly satisfy both TRMM and EOSDIS requirements.

**AM-1 Project** - The AM-1 project will keep the team informed of AM-1 flight and ground system development progress, problems, issues and schedules, and provide review and comment on AM-1 related integration test plans, procedures and reports. The AM-1 project and EGS I&T contractor will work together to develop joint tests whenever possible to non-redundantly satisfy both AM-1 and EOSDIS requirements.

**Landsat-7 Project** - The Landsat-7 project will keep the team informed of Landsat-7 flight and ground system development progress, problems, issues and schedules, and provide review and comment on Landsat-7 related integration test plans, procedures and reports. The Landsat-7 project and EGS I&T contractor will work together to develop joint tests whenever possible to non-redundantly satisfy both Landsat-7 and EOSDIS requirements.

**Networks Test Manager** - The Network Test Manager will keep the team informed of the status of the NASA institutional support elements and assist in the coordination of Nascom, Space Network, FDF, DSN, GN, WOTS, RFSOC and SDPF support for I&T tests. Network Test Manager support will include generating and releasing briefing messages, scheduling required network resources, and conducting network pre-test activities to insure that the networks are ready to support EGS I&T activities.

**Science Software I&T Manager** - The ESDIS SSI&T team will represent SSI&T interests at the TICTOC and keep the team informed of SSI&T progress, problems, issues, schedules and lessons learned. For EGS I&T planning purposes, it is assumed that ECS Level 3 requirements for SSI&T will be verified by the SSI&T team.

**Integrated Product Teams** - Described below.

### **5.2.2 Systems Integrated Product Team (SYS-IPT)**

The Systems Integrated Product Team (SYS-IPT) coordinates the activities of the other IPTs by focusing on issues crossing IPT boundaries, including mission and total systems testing, integrated schedules, common test tools and common test data. The SYS-IPT is responsible for the development and maintenance, with inputs from the other IPTs, of the I&T Level 4 schedule. The SYS-IPT will coordinate with the ESDIS Level 3 schedule (the ESDIS master test schedule) team for any additions, deletions or updates as required.

The SYS-IPT also coordinates the deliverable schedule (plans, procedures, reports) for all IPTs, and maintains a central library for EGS I&T Program produced documentation on the World Wide Web (WWW) EGS I&T Homepage. The SYS-IPT will develop, track, and report on EGS I&T Program metrics. The SYS-IPT will also oversee the development/acquisition, integration, and configuration control of tools and databases utilized for EGS I&T support, as well as any associated training.

Mission coordinators are members of the SYS-IPT and are currently assigned for the TRMM, Landsat-7, and AM-1 missions and will be assigned to future EOS/MTPE missions. Mission coordinators are the ESDIS liaison to the EOS/MTPE flight projects and are responsible for the development of EGS detailed mission requirements to support these missions and the coordination of EGS support for joint ESDIS/flight project testing. The mission coordinators may also be designated as test leads for EGS level testing or multi-mission testing that crosses EGS I&T IPT boundaries. The mission coordinators draw on the resources of the I&T IPTs as necessary to support joint testing and EGS system level testing. To support joint tests, the mission coordinators will develop joint test packages tailored to the ESDIS support requirements for that test. The following EGS level tests from the initial confidence test suite are assigned to the respective mission coordinators as indicated below:

Mission Coordinator	EGS I&T Confidence Test
AM-1	EGS3
TRMM	EGS4
Landsat-7	EGS5

The following Joint Tests are the responsibility of the SYS-IPT AM-1 Mission Coordinators:

Joint Tests	Join Test Id
AM-1 EOC Compatibility Test 1	ECT1
AM-1 EOC Compatibility Test 2	ECT2
AM-1 EOC Compatibility Test 3	ECT3
AM-1 ETE #1 Test	ETE #1
AM-1 ETE #2 Test	ETE #2
AM-1 ETE #3 Test	ETE #3

## Membership

Team Lead - Code 505  
EGS I&T Contractor  
DAAC M&O  
GSFC  
LaRC

EDC  
ASF  
ORNL  
JPL  
NSIDC  
Mission Coordinators  
EDOS Project  
EBnet Project

### 5.2.3 Flight Systems and Operations Integrated Product Team (FSO-IPT)

The Flight Systems and Operations IPT (FSO-IPT) is responsible for the integration of flight operations elements with the EGS. EGS functions, under the cognizance of the FSO-IPT, include telemetry command and control, mission planning and scheduling, spacecraft analysis, and integration of Instrument Support Terminals and Instrument Control Centers with the EGS. The FSO-IPT is responsible for the development, maintenance, execution, and results reporting for confidence test packages of the EOC component, EOC interfaces, and spacecraft operations confidence tests at the EGS level. Under the direction of the SYS-IPT, the FSO-IPT supports joint tests with the flight projects involving the EOC, such as the AM-1 EOC Compatibility Test (ECT) series, and EGS level confidence tests. The following tests from the initial confidence test suite are assigned to the FSO-IPT:

Telemetry Processing Confidence Test	(EOC1)
Command Processing Confidence Test	(EOC2)
Planning and Scheduling Confidence Test	(EOC3)
Telemetry Logging and Analysis Confidence Test	(EOC4)
EOC Resource Management Confidence Test	(EOC5)
EOC - EDOS Interface Confidence Test	(ICT2)
EOC - NCC Interface Confidence Test	(ICT9)
EOC - FDF Interface Confidence Test	(ICT10)
EDOS - ASTER GDS Interface Confidence Test	(ICT11)
EOC - ICC/IST Interface Confidence Test	(ICT13)
EOC - ASTER GDS Interface Confidence Test	(ICT14)
AM-1 Spacecraft Operations Confidence Test	(EGS1)
AM-1 Spacecraft Contingency Mode Confidence Test	(EGS2)
EGS - ASTER Instrument Operations Confidence Test	(EGS6)

### Membership

Team Lead - Code 505



EGS I&T Contractor  
Flight Operations Team  
ECS Project  
EDOS Project  
EBnet Project

#### **5.2.4 Science Systems and Operations Integrated Product Team (SSO-IPT)**

The Science Systems and Operations IPT (SSO-IPT) is responsible for the integration of the science data production, data archiving, and data distribution elements with the EGS. EGS functions, under the cognizance of the SSO-IPT, include science data ingest, ancillary data ingest, production planning and scheduling, production performance testing, product archiving, and product access and delivery. The SSO-IPT is responsible for the development, maintenance, execution, and results reporting for confidence test packages of the SDP component and the DAAC interfaces. Under the direction of the SYS-IPT, the SSO-IPT supports joint tests with the flight projects involving the DAACs, such as the TRMM Mission Simulation Series. The following tests from the initial confidence test suite are assigned to the SSO-IPT:

Data Ingest and Archive Confidence Test	(SDP1)
Science Data Production Confidence Test	(SDP2)
Data Access Confidence Test	(SDP3)
Standing Product Order Confidence Test	(SDP4)
V0 Interoperability Confidence Test	(SDP5)
Data Manipulation Confidence Test	(SDP6)
Security Confidence Test	(SDP7)
DAAC - SCF Interface Confidence Test	(ICT1)
DAAC - EDOS Interface Confidence Test	(ICT3)
DAAC - ADC Interface Confidence Test	(ICT4)
ECS - GSFC DAAC Interface Confidence Test	(ICT5)
DAAC - SDPF Interface Confidence Test	(ICT6)
DAAC - TSDIS Interface Confidence Test	(ICT7)
ECS - Landsat 7 Interface Confidence Test	(ICT8)
DAAC - ASTER GDS Interface Confidence Test	(ICT12)

#### **Membership**

Team Lead - Code 505  
EGS I&T Contractor  
ECS Project  
EDOS Project  
EBnet Project  
DAAC M&O  
GSFC

LaRC  
EDC  
ASF  
ORNL  
JPL  
NSIDC

Investigator / Science User Representation

#### **5.2.4.1 DAAC Performance Characterizations and DAAC-Unique Tests**

In addition to standardized ECS infrastructure testing at the DAACs, there is a need to accurately characterize DAAC performance with the science software integrated with the ECS and to perform certain DAAC-unique tests at each DAAC. Because local DAAC expertise is essential to these tests, they will be performed under the auspices of the SSO-IPT with the local DAAC representatives designated as test leads. As test leads, the local DAAC representatives manage the development and execution the tests.

#### **5.2.5 EDOS Integrated Product Team (EDOS-IPT)**

The EDOS IPT administers the EDOS test program under the direction of the EDOS I&T manager. EDOS tests are documented separately in their systems and acceptance test plans and procedures. The ESDIS I&T organization (GSFC code 505) maintains a representative on the EDOS IPT to gain insight into the EDOS test program, to help select tests from the EDOS test program that meet the needs and objectives of the EGS Confidence Test Program, and to coordinate EDOS support to EGS Interface and EGS System level confidence tests.

#### **Membership**

Team Lead - Code 510  
EGS I&T Contractor  
EDOS Project  
EDOS QA  
EDOS Developer  
EDOS M&O  
EDOS I&T  
EDOS Acceptance Test

#### **5.2.6 Other Support Group**

The Other Support group, although not an IPT, defines the institutional test plans as well as the network need dates and tests. The Other Support group is also responsible for establishing institutional upgrades and need dates.

## **Membership**

Code 505  
EGS I&T Contractor  
Nascom  
SN/NCC  
Ground Networks  
SDPF  
FDF  
EDOS Project  
Ebnet Project

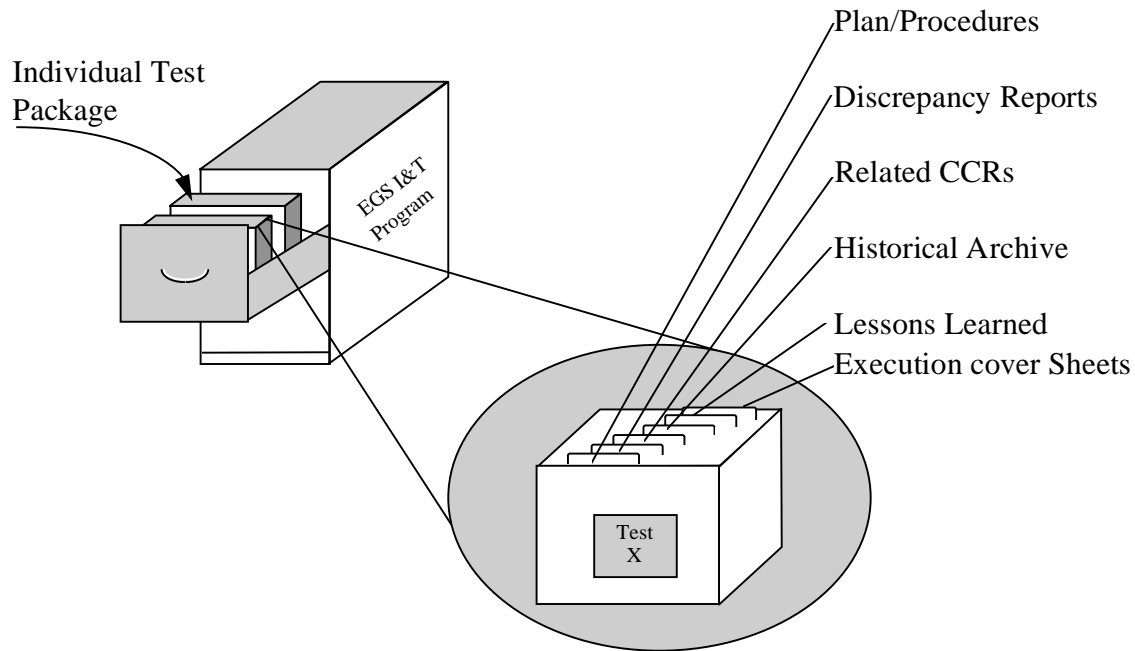
## **5.3 EGS I&T Confidence Test Packages**

### **5.3.1 Confidence Test Package Content**

Conceptually, a confidence test package may be thought of as a binder divided into the following folders (See Exhibit 5-2):

- Plan/Procedures
- Discrepancy Reports
- Related configuration change requests (CCRs)
- Historical Archive
- Lessons Learned
- Execution Cover Sheets

Each confidence test package developed for the EGS I&T Program will contain all these folders. An automated client/server tool, the Test Management Data Base (TMDB), is used to help generate test plans and procedures, map requirements to tests, maintain a historical archive, capture and report test results, and provide various metrics. Joint test packages will be tailored to contain only those folders needed to support EGS participation in the test. The content of the TMDB is routinely exported to the EGS I&T WWW Homepage, to provide up-to-date visibility by non-EGS I&T contractor personnel.



**Exhibit 5-2: Test Package Structure**

The plans/procedures will be developed to reflect the final system capabilities to the best of the IPTs understandability. Subsets of those procedures reflecting the delivered system capabilities will be run for any particular EGS version as described in the execution cover sheets.

The content of each section is described in the following paragraphs.

#### **5.3.1.1 Plan/Procedures Folder**

A plan/procedures document is generated for each confidence test in the following format:

##### **TITLE**

##### Test Objectives:

Identify the functional capabilities being exercised.

##### Requirements to be Verified:

List mission critical requirements to be verified by the test.

##### Test Configuration:

Provide a block diagram showing the major processing elements, data flows and data communication mechanisms.

Participants and Support Requirements:

Identify the participating organizations and equipment, circuits, and personnel support provided. For example,

EBnet - circuit from EDOS - EOC  
FOT - Command Activity Controller Operator  
EOC - 2 operator workstations, real time system

Identify any test tool requirements in this section.

Test Data:

Describe and identify by file name, script name, or other designation all required test data sets. Provide the source and physical locations of the data. The description should include volumes and errors or insertion of anomalous conditions.

Test Case Descriptions:

Provide a brief narrative description of each test case along with high level success criteria. Note that the goal for test cases is to be modular and focused on certain capabilities or functions, thus providing maximum flexibility to focus on delivered capabilities or those areas of current interest during test execution.

Test procedures:

Provide major event-level Procedures in three sections: test set-up, test execution, and test termination. See Exhibit 5-3 for an example of the format (Test Execution example) <sup>1</sup>used in these sections.

Step	Station	Action	Expected Results	Comments
1.	EDOS	Verify lock and processing of return link Health and Safety data to the EOC.	Solid lock, no data dropouts or encoding errors	

---

<sup>1</sup> Note: final Procedures shall be more detailed than the example shown in Exhibit 5-3, which is intended to show format only.

2.	EOC Spacecraft Activity Controller	Verify lock and processing of data on the xyz telemetry page	Dynamic data updating at user defined interval.	

**Exhibit 5-3: Procedure Format**

#### **5.3.1.2 Discrepancy Reports Folder**

Maintain a file of all discrepancy reports initiated as a result of running this package. This may be by hard copy or by query to the Discrepancy Report Tracking Tool (DRTT) as maintained on the World Wide Web site at URL: <http://iree.gsfc.nasa.gov/ddts/>.

#### **5.3.1.3 Related CCRs Folder**

Maintain a file of CCRs affecting functionality exercised by this test, either by hard copy or reference to on-line CCRs.

#### **5.3.1.4 Historical Archive Folder**

Contains a snapshot of all past formal executions of the test package. Data includes copies of the test procedure, the daily test summary reports, summary assessments, and the execution cover sheet used to define the test.

#### **5.3.1.5 Lessons Learned Folder**

Maintain a hard copy or electronic file of lessons learned from execution of this test, including recommendations for changes in procedures and data, changes to operational procedures, CCRs, etc.

#### **5.3.1.6 Execution Cover Sheet**

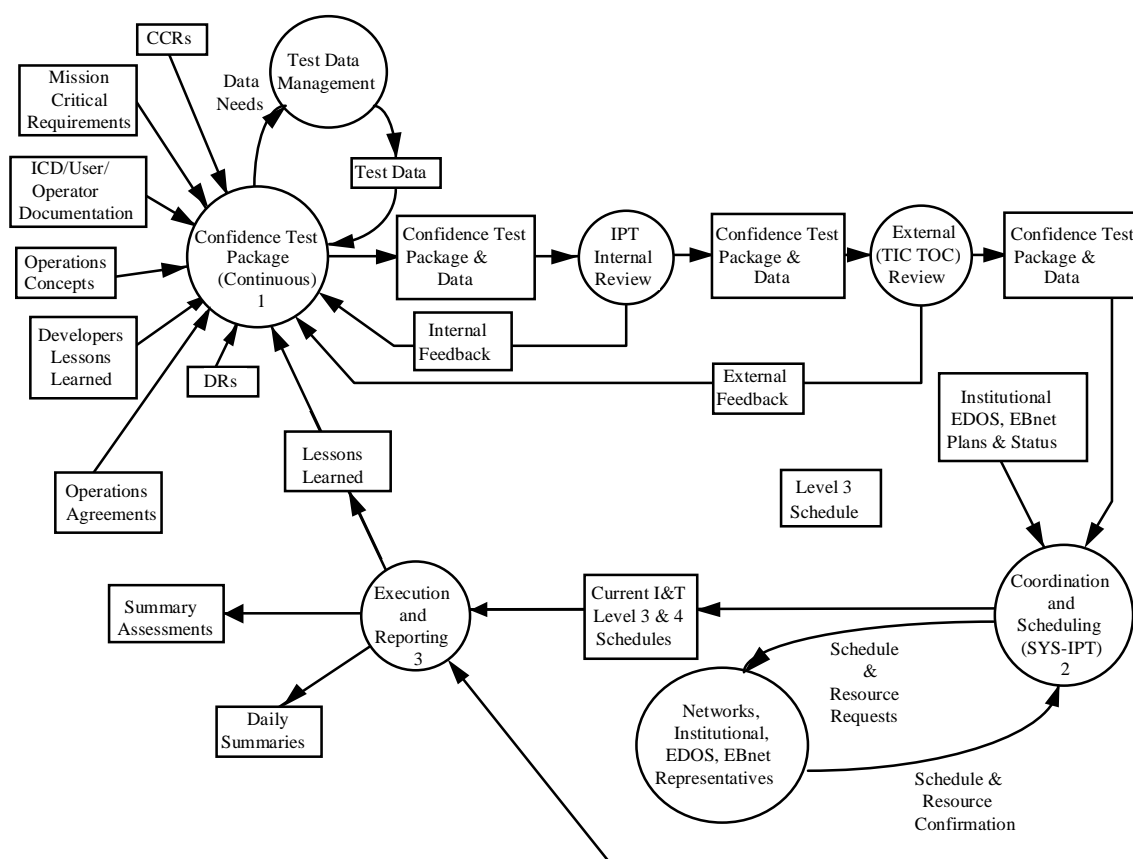
Specify the portions of the procedures to be executed for the current performance of the test. Record entrance and exit criteria, hardware and software configurations used. At a high level describe the most likely risks to successful completion of the test, and possible work around to mitigate them.

### 5.3.2 Test Production and Execution Process

The test production and execution process is a closed loop process supporting continuous improvement as illustrated in Exhibit 5-4. The phases of the process supporting the EGS Confidence Test Program are:

- 1) Confidence test package development
- 2) Coordination and scheduling
- 3) Execution and reporting

**Exhibit 5-4: Confidence Test Production Process**



### 5.3.2.1 Confidence Test Package Development Phase

**Inputs:** Operations Concept Documents (Operational Scenarios)  
Operations Agreements  
ICDs/User and Operator Guides  
Mission Critical Requirements  
Test Data Management (TDM)  
Development I&T lessons learned  
Relevant DRs  
Relevant CCRs

**Process:** A designated member of the cognizant IPT develops a draft confidence test package from the inputs and provides it to the other IPT members for review. Test data is identified and generated or obtained. The IPT conducts internal review and revision of the draft until it is ready for wider review by TICTOC members, particularly if it requires any institutional support. Upon receipt and incorporation of comments from the TICTOC, the package is released to SYS-IPT for posting, coordination of resources, and scheduling of dry run and “for the record” executions. Tests scheduled as dry runs are executed for the purpose of refining test procedure steps. Dry run tests are run during the confidence test package development phase and before formal “for the record” test execution.

**Outputs:** Confidence Test Package  
Test Data

### 5.3.2.2 Coordination and Scheduling Phase

**Inputs:** Confidence Test Package  
Test Data  
EDOS / EBnet / Institutional element plans and status  
EGS I&T Level 3 Schedule

**Process:** The SYS-IPT coordinates with the participating organizations to ensure that support requirements are understood and available in the planned time frame. When conflicts and inconsistencies are resolved, the EGS I&T Program Level 4 schedule is updated and corresponding updates are made to the ESDIS Level 3 schedule.

**Outputs:** Current I&T Level 3 and 4 schedules  
Resources coordinated and scheduled



### **5.3.2.3 Execution and Reporting Phase**

**Inputs:** Confidence Test Package  
Test Data  
Current EGS I&T Level 3 Schedule  
Current EGS I&T Level 4 Schedule

**Process:** During this phase, those portions of the package that the current configuration of the EGS will support are executed as “for the record” tests. During test execution, “for the record” test procedures are run, “red-lined” as necessary, test data errors are corrected, and DRs are submitted for any system problems uncovered. Daily summary reports are issued and lessons learned are recorded and fed back to the next iteration of the package. For confidence test suites executed to evaluate an EGS version or major component incremental delivery, a summary assessment will be provided when all tests have been completed. To the maximum extent possible, tests will be piggybacked. For example, if the EDOS project has scheduled a systems level test that executes a corresponding EGS I&T confidence test, that test run will be considered as execution of the EGS I&T confidence test.

**Outputs:** Revised Confidence Test Packages  
Discrepancy Reports  
Daily Summary Reports  
Summary Assessment  
Lessons Learned  
Historical Archive

## **5.4 Transition to the New Approach**

The Original EGS Version 1 I&T Plan is replaced by this initial suite of confidence tests, and the currently identified joint tests. Most of the planning effort made during the development of the Version 1 I&T Plan is directly transferable to the Confidence Test Program, as shown in Exhibit 5-5.

The Confidence Test Program is developed around continuously evolving test packages as opposed to discrete test documentation deliverables for each EGS Version. By the Test Readiness Review for an EGS Version, the portions of the confidence test packages that the version can support will be identified by the execution cover sheets in test packages.

### **EXHIBIT 5-5: Confidence Test Package Buildup from the Version 1 I&T Plan**

Confidence Test Package Title	Confidence Test Package ID	Version 1 I&T Plan Starting Point
Telemetry Processing Confidence Test	EOC1	V1-FT02
Command Processing Confidence Test	EOC2	V1-FT03
Planning and Scheduling Confidence Test	EOC3	V1-FT01
Telemetry Logging and Analysis Confidence Test	EOC4	New
Resource Management Confidence Test	EOC5	New
Data Ingest and Archive Confidence Test	SDP1	New
Science Data Production Confidence Test	SDP2	New
Data Access and Transfer Confidence Test	SDP3	New
Standing Product Order Confidence Test	SDP4	New
V0 Interoperability Confidence Test	SDP5	V1-EXT13
Data Manipulation Confidence Test	SDP6	New
Security Confidence Test	SDP7	New
DAAC - SCF Interface Confidence Test	ICT1	V1-EXT01
EOC-EDOS Interface Confidence Test	ICT2	V1-EXT02
DAAC - EDOS Interface Confidence Test	ICT3	V1-EXT02
DAAC - ADC Interface Confidence Test	ICT4	V1-EXT03
ECS - GSFC DAAC Interface Confidence Test	ICT5	V1-EXT04
DAAC - SDPF Interface Confidence Test	ICT6	V1-EXT05
DAAC - TSDIS Interface Confidence Test	ICT7	V1-EXT06
DAAC - L7 LPS Interface Confidence Test	ICT8	V1-EXT07
EOC - NCC Interface Confidence Test	ICT9	V1-EXT08
EOC - FDF Interface Confidence Test	ICT10	V1-EXT09
EDOS - ASTER GDS Interface Confidence Test	ICT11	New
ASTER GDS - DAAC Interface Confidence Test	ICT12	New
EOC - ICC/IST Interface Confidence Test	ICT13	New
EOC - ASTER GDS Interface Confidence Test	ICT14	New

*EGS Integration and Test Program Plan*

<b>Confidence Test Package Title</b>	<b>Confidence Test Package ID</b>	<b>Version 1 I&amp;T Plan Starting Point</b>
Spacecraft Operations Confidence Test	EGS1	New - starts from V1-FT01
Contingency Mode Operations Confidence Test	EGS2	V1-FT06
AM-1 Daily Operations Confidence Test	EGS3	V1-PST01
EGS - TRMM Interoperability Confidence Test	EGS4	V1-FT04
EGS - Landsat-7 Interoperability Confidence Test	EGS5	V1-FT05
ASTER Instrument Operations Test	EGS6	New

This page intentionally left blank

## 6. EGS I&T Program Test Automation

### 6.1 Overview

The EGS I&T Program will utilize various test tools to assist in achieving program objectives. These tools are utilized during the planning, execution, and analysis phases of the test program. Commercial-off-the-shelf (COTS) and contractor developed tools, and are used, provide the following benefits to the EGS I&T Program:

- Allow more thorough testing
- Permit test repeatability and reusability
- Track test results and discrepancies
- Simplify regression testing
- Reduce test development, product delivery, and test case modification time
- Improve EGS I&T team productivity
- Support early test procedure verification
- Provide metrics based on test planing and execution
- Enhance communications among team members at remote sites

### 6.2 Tooling Inventory

Tools that will be used across the EGS I&T Program effort are listed in Exhibit 6-1.

**EXHIBIT 6-1: EGS I&T Program Tools**

Tool Name	Developer	Description
Discrepancy Report (DR) Tracking Tool (DRTT)	NASA/CSC	Manages and tracks all defects and discrepancies that are encountered during EGS test activities. Used to submit DRs to ERB and/or ECSRB for processing. Produces metrics for management overview of problems encountered during testing.
EOSDIS Test System (ETS)	NASA/ATSC/CSC	<p>A test system comprised of the following three simulators:</p> <p>MPS is a low fidelity s/c simulator used to support testing of forward link and non-science return link processing.</p> <p>HRS is the EOSDIS return link science data processing and interface test tool.</p> <p>LRS is the functional EDOS interface between the EOC and either the SCITF or SSIM.</p>

Tool Name	Developer	Description
LoadRunner	Mercury	Used to perform load analysis in a client/server environment. Capabilities include load testing (i.e., multiple user emulation), performance testing (system response time, user load generation measurement), and system tuning (results, behavior, and performance analysis).
NCC Development, Test, and Training (NCC DT&T) System	Booz-Allen Hamilton	Simulates the external interfaces to the Network Control Center Data System (NCCDS), as well as the NCCDS itself, in real time, while logging test results for data analysis and reduction.
RTM	Marconi Systems Technology	Used during test planning as input for requirements coverage.
Spacecraft Simulator (SSIM)	Lockheed-Martin	Provides a high fidelity simulator for Flight Operations Team training and ground system integration and test. The SSIM provides dynamic health and safety and housekeeping telemetry in all rates and formats. The SSIM will accept real time and stored commands and provide a much broader range of telemetry responses to commands sent from the EOC.
Test Buddy	N/A	A portable PC used at remote sites to provide an interface between remote testers and local management. Also provides access to other test tools at remote sites.
Test Management Data Base (TMDB)	Intermetrics	This tool is used throughout the test program. Test cases and procedures are generated using this tool. The tool also provides access to the most current test procedures at remote sites. The tool imports data from the RTM database in order to map requirements to tests. Testers utilize the tool to plan test sessions, collect test session results, support report production (daily, flash, and formal test reports), and calculate metrics.
XRunner	Mercury	Multi-faceted capture/replay test tool used to support multiple types of testing, including automated and regression testing. Capabilities include test script development and reuse, test recording of system operational steps, and automated verification.

### 6.3 Tooling Allocation to Confidence Test

**EXHIBIT 6-2: Tooling Allocation to Confidence Test Packages**

<b><i>TEST</i></b>	<b><i>TOOL</i></b>			
ICT 1	TMDB	RTM	DRTT	
ICT 2	TMDB	RTM	DRTT	ETS
ICT 3	TMDB	RTM	DRTT	
ICT 4	TMDB	RTM	DRTT	
ICT 5	TMDB	RTM	DRTT	
ICT 6	TMDB	RTM	DRTT	
ICT 7	TMDB	RTM	DRTT	
ICT 8	TMDB	RTM	DRTT	
ICT 9	TMDB	RTM	DRTT	NCC DT&T
ICT 10	TMDB	RTM	DRTT	
ICT 11	TMDB	RTM	DRTT	ETS
ICT 12	TMDB	RTM	DRTT	
ICT 13	TMDB	RTM	DRTT	
ICT 14	TMDB	RTM	DRTT	ETS
EOC 1	TMDB	RTM	DRTT	ETS, SSIM
EOC 2	TMDB	RTM	DRTT	ETS, SSIM
EOC 3	TMDB	RTM	DRTT	NCC DT&T
EOC 4	TMDB	RTM	DRTT	ETS, SSIM
EOC 5	TMDB	RTM	DRTT	X runner, Load runner
SPD 1	TMDB	RTM	DRTT	ETS
SPD 2	TMDB	RTM	DRTT	
SPD 3	TMDB	RTM	DRTT	X runner, Loadrunning
SPD 4	TMDB	RTM	DRTT	
SPD 5	TMDB	RTM	DRTT	X runner
SPD 6	TMDB	RTM	DRTT	X runner
SPD 7	TMDB	RTM	DRTT	
EGS 1	TMDB	RTM	DRTT	
EGS 2	TMDB	RTM	DRTT	ETS, SSIM
EGS 3	TMDB	RTM	DRTT	
EGS 4	TMDB	RTM	DRTT	
EGS 5	TMDB	RTM	DRTT	
EGS 6	TMDB	RTM	DRTT	ETS

This page intentionally left blank



## 7. EGS I&T Program Metrics

### 7.1 Goals and Development

The EGS I&T Program metrics consist of a set of quantitative process and product measurements that focuses attention on the issues of schedule, productivity, and quality. These measurements serve as a system of checks and balances throughout the EGS I&T Program. In the context of the EGS I&T Program:

1. **Process** metrics are designed to focus on the question,  
“How much EGS I&T activity is complete vs. planned?”
2. **Product** metrics are designed to focus on the question,  
“How mission ready is the EGS?”

An example of a **process** specific metric is *confidence test package generation progress*. This metric tells the program whether schedule and productivity targets are being met.

Examples of **product** specific metrics are *defect per component* and *defect per subsystem*. A particular case where these metrics can be applied is in interface test result analysis. The *defect per component* correlated with *defect per subsystem* may show that one particular set of interfaced components are experiencing more difficulties than others when executing a variety of functions. Alternatively, these metrics may show that all interfaced components experience failure on a specific common function, such as error recovery. The EGS I&T product metrics can be used to give the developers tangible feedback to more quickly and effectively correct system defects.

The basic goals of the EGS I&T Program metrics are to:

- Provide a quantitative evaluation of the EGS I&T process and the EGS product
- Confirm initial estimates of EGS I&T time and resources, and EGS product quality
- Guide decisions on EGS I&T Program resources, schedule, and priority adjustments
- Identify when and where process improvements are needed on the EGS I&T Program
- Provide trend analyses

Exhibit 7-1 describes the EGS I&T Program metrics process.

### Exhibit 7-1: EGS I&T Program Metrics Process

The following subsections show, by metric category, the data being collected, the use of each data item, the planned frequency for collecting the measures, and the collection source.

#### 7.1.1 Process Metrics

Process metrics are measures of effort and schedule. Effort is measured through the relationship between planned or estimated time and resources and actual time and resources expended. The variations between the planned baseline schedule and actual performance is also measured. Exhibit 7-2 describes the process metrics.

### Exhibit 7-2: Process Metrics

Process Metric	Purpose	Definition	Frequency (Collect/ Analyze)	Source
Confidence test package generation (total count): <ul style="list-style-type: none"> <li>Number of tests for:               <ul style="list-style-type: none"> <li>-Interface</li> <li>-Component</li> <li>-EGS System</li> </ul> </li> <li>Number of test cases for:               <ul style="list-style-type: none"> <li>-Interface</li> <li>-Component</li> <li>-EGS System</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Monitor whether work units are generated with planned resources</li> <li>Quantify process stability and schedule risks</li> <li>Replanning aid</li> </ul>	Count tests and test cases generated.	Daily automatic collection and on-line reporting. Collected during test planning phase.  Monthly/ monthly	<ul style="list-style-type: none"> <li>TMDB</li> <li>EGS I&amp;T Program Monthly Summary Form</li> </ul>

Process Metric	Purpose	Definition	Frequency (Collect/Analyze)	Source
Test execution time	Provides: <ul style="list-style-type: none"> <li>Regression test time benchmark</li> <li>Basis for estimating time needed to complete tests</li> </ul>	Local clock time recorded.	Daily collection and on-line reporting.  Collected during test execution.	<ul style="list-style-type: none"> <li>Load Runner</li> <li>Testers</li> </ul>
Computer resource utilization	<ul style="list-style-type: none"> <li>Helps to establish a baseline for regression tests</li> <li>Input to schedule tests in an operations environment</li> <li>Can be used to identify design instabilities</li> </ul>	Records CPU utilization. Includes system and network statistics.	Daily collection and on-line reporting.  Collected during test execution.	<ul style="list-style-type: none"> <li>Load Runner</li> <li>Testers</li> </ul>
Test data files (required versus received)	<ul style="list-style-type: none"> <li>Indicates completion progress and quality</li> <li>Replanning aid</li> <li>Determine early test data needs (simulated or existing test data files)</li> </ul>	Percent of specific or unique test data files required during testing versus what is actually received per EGS version.	Monthly/monthly	<ul style="list-style-type: none"> <li>EGS I&amp;T Program Monthly Summary Form</li> </ul>
Test execution (planned versus)	<ul style="list-style-type: none"> <li>Indicates completion</li> </ul>	Count of the number of tests	Daily automatic	<ul style="list-style-type: none"> <li>TMDB</li> <li>EGS I&amp;T</li> </ul>

Process Metric	Purpose	Definition	Frequency (Collect/Analyze)	Source
actual): <ul style="list-style-type: none"> <li>Number of tests for: -Interface -Component -EGS System</li> <li>Number of test cases for: -Interface -Component -EGS System</li> </ul>	progress and quality <ul style="list-style-type: none"> <li>Replanning aid</li> <li>Quantifies performance toward meeting commitments for delivering products</li> </ul>	and test cases executed.	collection and on-line reporting. Collected during test execution.	Daily Test Summary
Number of joint tests participated in (planned versus actual)	<ul style="list-style-type: none"> <li>Indicates completion progress and quality</li> <li>Quantifies performance toward meeting commitments for delivering products</li> </ul>	Count of the number of joint tests.	Weekly/weekly. Occurs during test execution.	<ul style="list-style-type: none"> <li>EGS I&amp;T Daily Test Summary</li> </ul>
Number of changes to test case procedures during formal execution	Determine test process stability.	Count of the changes to test case procedures.	Weekly/monthly	<ul style="list-style-type: none"> <li>EGS I&amp;T Daily Test Summary</li> </ul>
Number of changes to test data files during formal execution	Stability indicator.	Count of the changes to test data files.	Weekly/monthly	<ul style="list-style-type: none"> <li>EGS I&amp;T Daily Test Summary</li> </ul>
Number of changes to Level	<ul style="list-style-type: none"> <li>Determine Level 4</li> </ul>	Count of the number of Level 4	Monthly/monthly	<ul style="list-style-type: none"> <li>EGS Version 1</li> </ul>

Process Metric	Purpose	Definition	Frequency (Collect/Analyze)	Source
4 schedule from one iteration to the next	Schedule stability <ul style="list-style-type: none"> <li>Replanning aid</li> </ul>	schedule changes by category: <ul style="list-style-type: none"> <li>Caused by changes to Level 3 schedule</li> <li>Caused by resource contention</li> <li>Caused by “not ready” condition</li> </ul>		I&T Level 4 Test Schedule <ul style="list-style-type: none"> <li>EGS I&amp;T Program Monthly Summary Form</li> </ul>

### 7.1.2 Product Metrics

Product metrics measure the quality of the delivered EGS configuration. One of the broadest after-the-fact measures is defect tracking. A defect can be recorded and tracked against any element where there is potential rework as a result. This measure indicates the readiness of the product to proceed to the next phase, including review or delivery. Exhibit 7-3 describes the product metrics.

**Exhibit 7-3: Product Metrics**

Product Metric	Purpose	Definition	Frequency (Collect/Analyze)	Source
Number of DRs found by EGS I&T (total): <ul style="list-style-type: none"> <li>Number of DRs opened</li> <li>Number of DRs fixed</li> </ul>	<ul style="list-style-type: none"> <li>Determine testing phase progress</li> <li>Quantifiable measure of software and testing phase quality</li> <li>Track the rate of defect closure</li> </ul>	Count of the defects opened, fixed, and total found by EGS I&T.	Weekly/bi-weekly. Occurs during test execution.  Alternately, daily automatic collection and on-line reporting	<ul style="list-style-type: none"> <li>EGS I&amp;T Daily Test Summary.</li> <li>DRTT</li> </ul>

Product Metric	Purpose	Definition	Frequency (Collect/Analyze)	Source
	<ul style="list-style-type: none"> <li>Trend analysis of remaining unresolved defects</li> </ul>		through DRTT.	
Type of DR	Determine what type of defect occurs most often (software, COTS, hardware).	Classification and count of defect types.	Daily automatic collection and on-line reporting.	<ul style="list-style-type: none"> <li>DRTT</li> </ul>
Severity of DR	Determine which defect severity level occurs most often.	Classification and count of defect severity levels (1,2,3).	Daily automatic collection and on-line reporting.	<ul style="list-style-type: none"> <li>DRTT</li> </ul>
Origin of DR	Determine which software development life cycle phase yields the most defects (test execution).	Classification and count of defect origins.	Daily automatic collection and on-line reporting through DRTT.	<ul style="list-style-type: none"> <li>DRTT</li> <li>ESDIS Management Summary of General Statistics</li> </ul>
Defects per EGS Component	Determine which component yields the most defects.	Classification and count of component defects.	Daily automatic collection and on-line reporting through DRTT.	<ul style="list-style-type: none"> <li>DRTT</li> </ul>
Defects per Subsystem	Determine which subsystem yields the most defects.	Classification and count of subsystem defects.	Daily automatic collection and on-line reporting through DRTT.	<ul style="list-style-type: none"> <li>DRTT</li> </ul>

Product Metric	Purpose	Definition	Frequency (Collect/Analyze)	Source
Test analysis requirements: <ul style="list-style-type: none"> <li>Passed</li> <li>Failed</li> <li>Partially tested</li> </ul>	<ul style="list-style-type: none"> <li>Determines testing progress</li> <li>Replanning aid</li> </ul>	Count of the number of requirements executed as appropriate.	Daily automatic collection and on-line reporting. Collected during test execution.	<ul style="list-style-type: none"> <li>TMDB</li> </ul>
Number of changes to Level 3 requirements	Stability indicator.	Count of the changes to Level 3 requirements.	Periodic automatic reporting through RTM, based on releases.	<ul style="list-style-type: none"> <li>RTM</li> </ul>

## 7.2 Collection and Tracking

In order to yield the described metrics, timely and consistent data must be periodically collected throughout the EGS I&T Program. The majority of data will be collected as an automated by-product when regularly recorded test data is entered into on-line vendor supplied or in-house developed test data collection and tracking tools. Examples of automated data collection and tracking include requirements and Traceability tools, such as the RTM and TMDB, defect tracking tools, such as the DRTT, and testing tools, such as LoadRunner and XRunner. Other tracking tools include spreadsheet, database, and project management software.

In addition, the EGS I&T Program monthly summary form and daily test summary collection forms will be used for instances when data collection is not currently supported by an on-line collection and tracking tool and it is not cost-effective to do so. Data collection forms are used during the test planning and are part of the daily test summaries included in the confidence test packages. Each IPT is responsible for submitting completed data collection forms to the SYS-IPT. Exhibit 7-4 summarizes the purpose of the data collection forms and Appendix B contains examples of each data collection form.

Name	Purpose
EGS I&T Program Monthly Summary Form	Provides a record of the current status of the test planning phase. Includes information on the number of test cases, interface tests, and test data required, number of changes to the Level 4 schedule, and number of changes to Level 3 requirements.
EGS I&T Daily Test	Records information on daily test statuses such as number

Name	Purpose
Summary	of test cases executed (includes successful and unsuccessful), number of joint tests participated in, number of new DRs written by EGS I&T, number of DRs verified, number of changes to test case procedures and test data files (changes during actual testing).

**Exhibit 7-4: EGS I&T Program Data Collection Forms**

### 7.3 Analysis and Reporting

Analyzing the data involves the continuing ability to store, retrieve, manipulate, and perform analysis of the metric data. This effort will produce a baseline set of process and product models for the program. Once a baseline is established, analysis will involve the examination of metric data to determine how trends correlate with program accomplishments and difficulties. Analysis will also focus on determining the impact of changes to processes and the introduction of new technologies or tools and approaches.

The EGS I&T Program metric analysis will support generations of reports which summarize the program goal, the results measured, and the conclusions reached. Report summaries can be tabular or graphical. The TMDB and DRTT tools automatically generate certain tabular metric reports, while the LoadRunner and XRunner tools automatically generate graphical and tabular metric reports. Graphical data reporting is often an extension of tabular data in which text and numerical data is displayed in pie charts, line graphs, Gantt charts, and histograms.

The generation and distribution of summary reports is performed by the SYS-IPT upon completion of every test case and as indicated in the EGS I&T contractor's Statement of Work (SOW). These report summaries can range from single test case summaries to multi-project roll-ups that provide high-level information for use in project comparisons.



## Appendix A - Requirements Verification Matrix

By Confidence Test Package ID

Confidence Test Package ID	Confidence Test Package Description	Requirement ID
V1-ECT-01	EOC Compatibility Test 1	None Allocated
V1-ECT-02	EOC Compatibility Test 2	None Allocated
V1-ECT-03	EOC Compatibility Test 3	None Allocated
V1-EGS-01	AM-1 Spacecraft Operations Confidence Test	None Allocated
V1-EGS-02	AM-1 Spacecraft Contingency Mode Confidence Test	NI-0210#B NI-0220#B NI-0230#A AM1-0020#B AM1-0030#B AM1-0050#B AM1-0070#B AM1-0090#B EOC-2535#B EOC-3238#A EOC-3238#B EOC-4005#A EOC-4005#B EOC-5030#B EOSD0015#B
V1-EGS-03	AM-1 Mission Daily Operations Confidence Test	None Allocated
V1-EGS-04	EGS - TRMM Interoperability Confidence Test	TRMM3070#A TRMM4060#A TRMM5010#A TRMM5020#A TRMM5030#A TRMM5040#A TRMM5050#A TRMM5060#A TRMM5070#A TRMM5100#A TRMM8010#A TRMM8071#A TRMM8090#A TRMM8110#A
V1-EGS-05	EGS - Landsat-7 Interoperability Confidence Test	LAND-0030#A LAND-0050#A LAND-0060#A

		LAND-0070#A LAND-0080#A LAND-0085#A LAND-0150#A LAND-0170#A LAND-0185#A LAND-0220#A
V1-EGS-06	EGS - ASTER Instrument Operations Confidence Test	None Allocated
V1-EOC-01	Telemetry Processing Confidence Test	NI-0030#B AM1-0050#B AM1-0070#B AM1-0090#B AM1-1060#B AM1-1070#B EOC-5010#A EOC-5010#B EOC-5012#B EOC-5015#A EOC-5015#B EOC-5020#A EOC-5020#B EOC-5030#B EOC-5045#B EOC-5050#B EOC-5070#A EOC-5070#B EOC-5080#A EOC-5080#B EOC-5090#A EOC-5090#B EOC-5100#A EOC-5100#B EOC-5105#B EOC-5110#A EOC-5110#B EOC-5120#B EOC-5180#B EOC-5190#B EOC-5220#B EOC-5230#B EOC-5240#B EOC-6150#B EOC-6160#B EOC-7120#A EOC-7120#B

		EOC-8290#B EOC-8320#B EOC-9025#A EOC-9025#B EOC-9040#A EOC-9040#B EOSD0025#A EOSD0025#B EOSD1502#A EOSD1502#B EOSD1605#A EOSD1605#B AM1-1080-#B
V1-EOC-02	Command Processing Confidence Test	AM1-0020#B AM1-0030#B EOC-3030#A EOC-3030#B EOC-3238#A EOC-3238#B EOC-4005#A EOC-4005#B EOC-4008#A EOC-4008#B EOC-4010#A EOC-4010#B EOC-4015#A EOC-4015#B EOC-4018#A EOC-4018#B EOC-4020#A EOC-4020#B EOC-4100#A EOC-4100#B EOC-4120#B EOC-4125#B EOC-4130#A EOC-4130#B EOC-4140#A EOC-4160#B EOC-4166#B EOC-4200#A EOC-4200#B EOC-5030#A EOC-5030#B EOC-5050#B

		EOC-5130#B EOC-6150#B EOC-6160#B EOC-7010#A EOC-7010#B EOC-8010#A EOC-8010#B EOC-8090#A EOC-8090#B EOSD0025#A EOSD0025#B EOSD0500#A EOSD0500#B EOSD1000#B EOSD1500#B EOSD1502#A EOSD1502#B
V1-EOC-03	Planning and Scheduling Confidence Test	EOC-0030#B EOC-1005#B EOC-2010#B EOC-2020#A EOC-2020#B EOC-2030#A EOC-2030#B EOC-2070#A EOC-2070#B EOC-2160#B EOC-2170#A EOC-2170#B EOC-2180#A EOC-2180#B EOC-2190#B EOC-2200#A EOC-2200#B EOC-2210#A EOC-2210#B EOC-2220#A EOC-2220#B EOC-2230#B EOC-2240#B EOC-2250#A EOC-2250#B EOC-2260#B EOC-2270#A EOC-2270#B

EOC-2272#A
EOC-2272#B
EOC-2280#A
EOC-2280#B
EOC-2290#A
EOC-2290#B
EOC-2300#A
EOC-2300#B
EOC-2310#A
EOC-2310#B
EOC-2320#A
EOC-2320#B
EOC-2350#A
EOC-2350#B
EOC-2370#B
EOC-2400#B
EOC-2405#B
EOC-2410#B
EOC-2420#B
EOC-2430#B
EOC-2460#A
EOC-2460#B
EOC-2480#A
EOC-2480#B
EOC-2482#A
EOC-2482#B
EOC-2490#A
EOC-2490#B
EOC-2510#A
EOC-2510#B
EOC-2520#B
EOC-2530#B
EOC-2535#B
EOC-2540#A
EOC-2540#B
EOC-2550#A
EOC-2550#B
EOC-2555#A
EOC-2555#B
EOC-2570#B
EOC-2590#B
EOC-2620#A
EOC-2620#B
EOC-2630#B
EOC-3015#B

		EOC-3017#B EOC-3020#A EOC-3020#B EOC-3024#B EOC-3030#A EOC-3030#B EOC-3050#A EOC-3050#B EOC-3070#B EOC-3080#A EOC-3080#B EOC-3086#B EOC-3090#A EOC-3090#B EOC-3160#A EOC-3160#B EOC-3200#B EOC-3210#A EOC-3210#B EOC-3225#B EOC-3226#B EOC-3238#A EOC-3238#B EOC-3240#B EOC-4060#A EOC-4060#B EOC-5030#A EOC-5030#B EOSD1480#B EOSD1520#B EOSD1530#B
V1-EOC-04	Telemetry Logging and Analysis Confidence Test	NI-0030#B EOC-6010#A EOC-6010#B EOC-6050#A EOC-6050#B EOC-6060#A EOC-6060#B EOC-6070#A EOC-6070#B EOC-6100#A EOC-6100#B EOC-6110#A EOC-6110#B EOC-6130#B

		EOC-6140#B EOC-6195#A EOC-6195#B EOC-7060#A EOC-7060#B EOC-7120#A EOC-7120#B EOC-8290#B EOC-8320#B EOC-9040#A EOC-9040#B EOSD1502#A EOSD1502#B
V1-EOC-05	EOC Resource Management Confidence Test	EOC-8090#A EOC-8090#B EOC-8100#B EOC-8110#A EOC-8110#B EOC-8130#A EOC-8130#B EOC-8140#A EOC-8140#B EOC-8160#B EOC-8220#B EOC-8240#B EOC-8250#B EOC-8260#B EOC-9010#A EOC-9010#B EOC-9020#A EOC-9020#B EOC-9025#A EOC-9025#B EOC-9080#A EOC-9080#B EOC-9110#A EOC-9110#B EOSD2430#A EOSD2510#A EOSD2510#B EOSD2550#A EOSD2550#B EOSD2990#A EOSD2990#B EOSD3000#A

		EOSD3000#B EOSD3710#A EOSD3710#B
V1-ICT-01	DAAC - SCF Interface Confidence Test	AM1-0230 AM1-0240 SCF-0001 SCF-0010 SCF-0020 SCF-0025 SCF-0030 SCF-0060 SCF-0070 SCF-0080 SCF-0090 SCF-0100 SCF-0110 SCF-0120 SCF-0130 SCF-0140 SCF-0150 SCF-0160 SCF-0170 SCF-0180 SCF-0190 SCF-0200 SCF-0210 SCF-0220 SCF-0230 SCF-0240 SCF-0250 SCF-0260 SCF-0270 SCF-0280 SCF-0290 SCF-0300 SCF-0310 SCF-0320 SCF-0330 SCF-0340 SCF-0350 SCF-0360 SCF-0370 SCF-0380 SCF-0390 ICC-7060



ICC-7070
ICC-7060#A
ICC-7070#A
SCF-0001#A
SCF-0001#B
SCF-0010#A
SCF-0010#B
SCF-0020#A
SCF-0020#B
SCF-0025#A
SCF-0025#B
SCF-0030#A
SCF-0030#B
SCF-0040#A
SCF-0060#A
SCF-0060#B
SCF-0070#A
SCF-0070#B
SCF-0080#A
SCF-0080#B
SCF-0090#A
SCF-0090#B
SCF-0100#A
SCF-0100#B
SCF-0110#A
SCF-0110#B
SCF-0120#A
SCF-0120#B
SCF-0130#B
SCF-0140#B
SCF-0150#B
SCF-0160#B
SCF-0180#B
SCF-0190#B
SCF-0200#A
SCF-0200#B
SCF-0210#A
SCF-0210#B
SCF-0220#A
SCF-0220#B
SCF-0230#A
SCF-0230#B
SCF-0240#A
SCF-0240#B
SCF-0250#A

		SCF-0250#B SCF-0260#A SCF-0260#B SCF-0270#A SCF-0270#B SCF-0280#A SCF-0280#B SCF-0290#B SCF-0300#A SCF-0300#B SCF-0310#A SCF-0310#B SCF-0320#A SCF-0320#B SCF-0330#A SCF-0330#B SCF-0340#A SCF-0340#B SCF-0350#A SCF-0350#B SCF-0360#A SCF-0360#B SCF-0370#A SCF-0370#B SCF-0380#A SCF-0380#B SCF-0390#A SCF-0390#B SCF-0170#B*
V1-ICT-02	EOC - EDOS Interface Confidence Test	NI-0010#B NI-0020#B NI-0030#B EOC-0040#A EOC-0040#B EOC-4010#A EOC-4010#B EOC-4018#A EOC-4018#B EOC-4020#A EOC-4020#B EOC-4130#A EOC-4130#B EOC-4200#A EOC-4200#B EOC-5010#A

		EOC-5010#B EOC-5012#B EOC-5015#A EOC-5015#B EOC-5020#A EOC-5020#B EOC-5045#B EOC-5050#B EOC-5080#A EOC-5080#B EOC-5090#A EOC-5090#B EOC-5100#A EOC-5100#B EOC-5105#B EOC-5190#B EOC-5220#B EOC-5230#B EOC-5240#B EOC-8100#B EOC-8110#A EOSD0020#A EOSD0020#B EOSD1502#A EOSD1502#B EOSD1605#A EOSD1605#B EDOS-A.1.1#B EDOS-A.1.2#B EDOS-A.1.3#B
V1-ICT-04	DAAC - ADC Interface Confidence Test	NOAA0010 NOAA0020 NOAA0030 NOAA0100 NOAA0110 NOAA0120 NOAA0130 NOAA0140 NOAA0150 NOAA0200 NOAA0210 NOAA0220 NOAA0230 NOAA0240 NOAA0250

NOAA0260
NOAA0270
NOAA0280
NOAA0290
NOAA0300
NOAA0310
NOAA0320
NOAA0330
NOAA0340
NOAA0350
NOAA0400
NOAA0410
NOAA0420
NOAA0430
NOAA0440
NOAA0450
NOAA0460
NOAA0510
NOAA0520
NOAA0530
NOAA0560
NOAA0570
NOAA0580
NOAA0600
NOAA0610
NOAA0700
NOAA0710
NOAA0720
NOAA0730
NOAA0800
IMS-0380
IMS-0600
IMS-0620
IMS-0780
IMS-0860
IMS-0870
IMS-0880
IMS-0890
IMS-1290
IMS-0380#A
IMS-0380#B
IMS-0390#A
IMS-0600#A
IMS-0600#B
IMS-0620#A

		IMS-0620#B IMS-0780#B IMS-0860#B IMS-0870#B IMS-0890#B NOAA0010#B NOAA0020#B NOAA0030#B NOAA0100#B NOAA0120#B NOAA0140#B NOAA0210#B NOAA0220#B NOAA0230#B NOAA0250#B NOAA0260#B NOAA0290#B NOAA0300#B NOAA0330#B NOAA0340#B NOAA0410#B NOAA0430#B NOAA0440#B NOAA0460#B NOAA0510#B NOAA0530#B NOAA0560#B NOAA0570#B NOAA0600#B NOAA0610#B NOAA0700#B NOAA0710#B NOAA0720#B NOAA0730#B NOAA0800#B
V1-ICT-05	ECS - GSFC DAAC Interface Confidence Test	NOAA0700 NOAA0710 NOAA0720 NOAA0730 EOSD1710 EOSD1710#A EOSD5000#B NOAA0700#A NOAA0700#B NOAA0710#A

		NOAA0710#B NOAA0720#A NOAA0720#B NOAA0730#A NOAA0730#B
V1-ICT-06	DAAC - SDPF Interface Confidence Test	TRMM1010 TRMM1030 TRMM1040 TRMM1050 TRMM1060 TRMM1070 TRMM1080 TRMM1090 TRMM1100 TRMM1110 TRMM1120 TRMM1130 TRMM1140 TRMM1150 TRMM1160 TRMM1170 TRMM1180 TRMM1190 TRMM1195 TRMM1200 TRMM1210 TRMM1280 TRMM2010 TRMM2030 TRMM2040 TRMM2050 TRMM2060 TRMM2070 TRMM2080 TRMM2090 TRMM2100 TRMM2110 TRMM2120 TRMM2130 TRMM2140 TRMM2150 TRMM2160 TRMM2170 TRMM2180 TRMM2185

		TRMM2190 TRMM2200 TRMM2270 TRMM8100 TRMM8120 SDPS0020#A
V1-ICT-07	DAAC - TSDIS Interface Confidence Test	TRMM3010#A TRMM3030#A TRMM3040#A TRMM3050#A TRMM3060#A TRMM3080#A TRMM3090#A TRMM3100#A TRMM3110#A TRMM3120#A TRMM3130#A TRMM4010#A TRMM4030#A TRMM4040#A TRMM4050#A TRMM4070#A TRMM4080#A TRMM4090#A TRMM4100#A TRMM4110#A TRMM4130#A TRMM5010#A TRMM5020#A TRMM5030#A TRMM5040#A TRMM5060#A TRMM5100#A
V1-ICT-08	ECS - Landsat-7 Interface Confidence Test	LAND-0030#A LAND-0050#A LAND-0060#A LAND-0070#A LAND-0080#A LAND-0085#A LAND-0150#A LAND-0170#A LAND-0185#A LAND-0220#A
V1-ICT-09	EOC - NCC Interface Confidence Test	EOC-2400#B EOC-2405#B

		EOC-2410#B EOC-2420#B EOC-4060#A EOC-4060#B EOC-5030#A EOC-5030#B EOSD1520#B EOSD1530#B
V1-ICT-10	EOC - FDF Interface Confidence Test	EOC-5185#B EOSD1502#B EOSD1505#B EOSD1510#B
V1-ICT-11		None Allocated
V1-ICT-12	DAAC - ASTER GDS Interface Confidence Test	ASTER-0020#B ASTER-0030#B ASTER-0210#A ASTER-0220#A ASTER-0240#A ASTER-0250#A ASTER-0700#B ASTER-0880#A ASTER-0885#A ASTER-0890#A ASTER-0895#A ASTER-1060#A
V1-ICT-13	EOC - ICC/IST Interface Confidence Test	EOC-2020#A EOC-2020#B EOC-2170#A EOC-2170#B EOC-2180#A EOC-2180#B EOC-2190#B EOC-2220#A EOC-2220#B EOC-2230#B EOC-2240#B EOC-2250#A EOC-2250#B EOC-2260#B EOC-2270#A EOC-2270#B EOC-2272#A EOC-2272#B EOC-2290#A EOC-2290#B



EOC-2300#A
EOC-2300#B
EOC-2310#A
EOC-2310#B
EOC-2320#A
EOC-2320#B
EOC-2350#A
EOC-2350#B
EOC-2480#A
EOC-2480#B
EOC-2482#A
EOC-2482#B
EOC-2490#A
EOC-2490#B
EOC-2510#A
EOC-2510#B
EOC-2540#A
EOC-2540#B
EOC-2550#A
EOC-2550#B
EOC-2555#A
EOC-2555#B
EOC-2570#B
EOC-2590#B
EOC-2620#A
EOC-2620#B
EOC-2630#B
EOC-3020#A
EOC-3020#B
EOC-3030#A
EOC-3030#B
EOC-3200#B
EOC-3210#A
EOC-3210#B
EOC-3225#B
EOC-3226#B
EOC-4015#A
EOC-4015#B
EOC-4100#B
EOC-4166#B
EOC-4168#B
EOC-4210#B
EOC-6020#A
EOC-6020#B
EOC-6060#A

EOC-6060#B
EOC-6070#A
EOC-6070#B
EOC-6100#A
EOC-6100#B
EOC-6130#B
EOC-6140#B
EOC-6160#B
EOC-6200#B
EOC-6210#B
EOC-7010#A
EOC-7010#B
EOC-7015#A
EOC-7015#B
EOC-7020#B
EOC-7025#A
EOC-7030#A
EOC-7030#B
EOC-7045#A
EOC-7045#B
EOC-7120#A
EOC-7120#B
EOC-8020#B
EOC-8110#A
EOC-8285#A
EOC-8285#B
EOC-8320#B
EOC-9025#A
EOC-9025#B
EOSD1500#B
EOSD2510#A
EOSD2510#B
EOSD3820#B
FOS-0020#A
FOS-0020#B
FOS-0025#A
FOS-0025#B
FOS-0040#A
FOS-0040#B
ICC-0010#B
ICC-0020#B
ICC-0030#A
ICC-0030#B
ICC-0055#A
ICC-0055#B

ICC-0070#B
ICC-1130#B
ICC-2010#A
ICC-2010#B
ICC-2015#B
ICC-2050#A
ICC-2050#B
ICC-2052#B
ICC-2060#B
ICC-2110#B
ICC-2115#B
ICC-2140#A
ICC-2140#B
ICC-2150#A
ICC-2150#B
ICC-2190#A
ICC-2190#B
ICC-2210#A
ICC-2210#B
ICC-2220#A
ICC-2220#B
ICC-2230#A
ICC-2230#B
ICC-2250#A
ICC-2250#B
ICC-2270#A
ICC-2270#B
ICC-2280#A
ICC-2280#B
ICC-2290#A
ICC-2290#B
ICC-2300#A
ICC-2300#B
ICC-2350#B
ICC-2370#B
ICC-2380#B
ICC-2390#A
ICC-2390#B
ICC-2400#A
ICC-2400#B
ICC-3010#A
ICC-3010#B
ICC-3020#B
ICC-3040#A
ICC-3040#B

ICC-3050#B
ICC-3060#B
ICC-3070#B
ICC-3071#B
ICC-3085#B
ICC-3090#A
ICC-3090#B
ICC-3100#A
ICC-3100#B
ICC-3110#A
ICC-3110#B
ICC-3210#A
ICC-3210#B
ICC-3230#B
ICC-3270#A
ICC-3270#B
ICC-3370#B
ICC-4020#A
ICC-4020#B
ICC-4045#A
ICC-4045#B
ICC-4050#B
ICC-4060#B
ICC-4070#B
ICC-4090#A
ICC-4090#B
ICC-4095#B
ICC-4100#A
ICC-4100#B
ICC-4110#B
ICC-4120#B
ICC-4130#B
ICC-4150#A
ICC-4150#B
ICC-4170#B
ICC-4410#A
ICC-4410#B
ICC-4420#A
ICC-4420#B
ICC-4440#B
ICC-4450#A
ICC-4450#B
ICC-4460#A
ICC-4460#B
ICC-4470#A

ICC-4470#B
ICC-4480#B
ICC-4490#A
ICC-4490#B
ICC-4500#B
ICC-4510#B
ICC-4540#B
ICC-4545#B
ICC-4550#A
ICC-4550#B
ICC-4560#A
ICC-4560#B
ICC-4570#B
ICC-4580#B
ICC-4590#B
ICC-4600#B
ICC-4730#B
ICC-4740#A
ICC-4740#B
ICC-4760#A
ICC-4760#B
ICC-4775#A
ICC-4775#B
ICC-4780#A
ICC-4780#B
ICC-4790#A
ICC-4790#B
ICC-6005#A
ICC-6005#B
ICC-6010#B
ICC-6020#A
ICC-6020#B
ICC-6030#B
ICC-6040#A
ICC-6040#B
ICC-6060#A
ICC-6060#B
ICC-6070#A
ICC-6070#B
ICC-6090#B
ICC-6110#B
ICC-6130#B
ICC-6135#B
ICC-6140#B
ICC-6150#B

		ICC-6510#A ICC-6510#B ICC-6520#A ICC-6520#B ICC-6525#A ICC-6525#B ICC-6540#A ICC-6540#B ICC-6580#A ICC-6580#B ICC-6600#A ICC-6600#B ICC-7060#A ICC-7070#A ICC-8010#B ICC-8020#B ICC-8050#B
V1-ICT-14	EOC - ASTER GDS Interface Confidence Test	ASTER-0880 ASTER-0885 ASTER-0890 ASTER-0895 ASTER-1060 ASTER-0110#B
V1-SDP-01	Data Ingest and Archive Confidence Test	DADS0487#A DADS2270#A DADS2276#A DADS2300#A DADS2950#A EOSD0020#A EOSD1502#A EOSD3220#A EOSD3910#A ESN-0070#A ESN-0290#A ESN-0300#A ESN-0490#A ESN-0510#A ESN-0620#A ESN-0640#A ESN-0830#A ESN-0840#A ESN-0900#A ESN-0920#A ESN-1140#A ESN-1170#A

		ESN-1340#A ESN-1350#A IMS-0240#A IMS-0350#A IMS-1790#A SDPS0020#A SDPS0021#A SMC-0340#A SMC-1330#A SMC-3350#A SMC-3390#A SMC-3395#A SMC-4315#A SMC-4335#A
V1-SDP-02	Science Data Production Confidence Test	DADS1472#A EOSD0720#A EOSD1010#A ESN-0070#A ESN-0490#A ESN-0600#A ESN-0610#A IMS-0130#A IMS-0210#A IMS-0350#A IMS-1080#A IMS-1650#A IMS-1700#A SMC-1300#A SMC-1330#A SMC-3340#A SMC-3345#A SMC-3350#A SMC-3385#A
V1-SDP-03	Data Access Confidence Test	DADS2315#A EOSD0020#A EOSD0500#A EOSD0730#A EOSD1010#A EOSD1502#A EOSD2430#A EOSD2510#A EOSD2550#A ESN-0280#A ESN-0290#A ESN-0300#A

		ESN-0450#A ESN-0490#A ESN-0510#A ESN-0590#A ESN-0600#A ESN-0610#A ESN-1140#A ESN-1170#A ESN-1180#A ESN-1340#A ESN-1350#A ESN-1360#A ESN-1400#A ESN-1430#A IMS-0040#A IMS-0130#A IMS-0210#A IMS-0230#A IMS-0510#A IMS-1080#A IMS-1650#A IMS-1700#A SMC-1300#A SMC-1330#A SMC-5305#A SMC-5320#A SMC-5325#A SMC-5330#A SMC-5335#A
V1-SDP-04	Standing Product Order Confidence Test	DADS1472#A DADS2000#A EOSD0020#A EOSD1010#A ESN-0290#A ESN-0300#A ESN-0450#A ESN-0610#A ESN-1140#A ESN-1170#A ESN-1206#A ESN-1207#A ESN-1340#A ESN-1350#A IMS-1080#A IMS-1650#A



		IMS-1700#A SMC-1300#A SMC-1330#A SMC-1345#A SMC-3335#A SMC-3350#A
V1-SDP-05	V0 Interoperability Confidence Test	SDPS0010 SDPS0020 SDPS0025 SDPS0026 SDPS0030 SDPS0031 SDPS0032 SDPS0035 SDPS0050 SDPS0080 SDPS0085 SDPS0090 SDPS0091 SDPS0092 SDPS0093 SDPS0094 SDPS0095 SDPS0100 SDPS0110 SDPS0120 SDPS0130 SDPS0140 SDPS0150 SDPS0170
V1-SDP-06	Data Manipulation Confidence Test	NI-0330#B DADS0590#B DADS0740#B DADS0930#B DADS1475#B DADS2200#B DADS2470#B EOSD5250#A IMS-0320#A IMS-0320#B IMS-0420#A IMS-0420#B IMS-0700#B IMS-0705#B IMS-0720#B

		IMS-0730#B IMS-0810#B IMS-0920#B IMS-1520#A IMS-1520#B SDPS0220#B SDPS0230#B
V1-SDP-07	Security Confidence Test	EOSD2430#A EOSD2440#A EOSD2510#A EOSD2550#A EOSD2990#A EOSD3000#A EOSD3200#A ESN-0650#A ESN-1380#A ESN-1400#A ESN-1430#A IMS-0060#A SMC-0350#A SMC-5305#A SMC-5330#A SMC-5335#A SMC-5340#A SMC-5345#A SMC-5350#A SMC-5355#A SMC-5365#A SMC-7300#A SMC-8880#A

## By Requirement ID

<b>REQ. ID</b>	<b>REQUIREMENT TEXT</b>	<b>CONF. TEST PACKAGE ID</b>
AM1-0020#B	The EOC shall have the capability to send (via EDOS/EBnet and the SN, GN, DSN, or WOTS) and the AM-1 spacecraft shall have the capability to receive spacecraft commands in CCSDS CLTUs (as defined in AM-1 ICD 106).	V1-EGS-02 V1-EOC-02
AM1-0030#B	The EOC shall have the capability to send (via EDOS/EBnet and the SN, GN, DSN, or WOTS) and the AM-1 spacecraft shall have the capability to receive instrument commands in CCSDS CLTUs (as defined in AM-1 ICD 106).	V1-EGS-02 V1-EOC-02
AM1-0050#B	The AM-1 spacecraft shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs containing CCSDS telemetry packets and CLCWs) real time AM-1 spacecraft and instrument housekeeping telemetry packets (as defined in AM-1 ICD 106) via EDOS/EBnet and the SN, GN, DSN, or WOTS interfaces.	V1-EGS-02 V1-EOC-01
AM1-0070#B	The AM-1 spacecraft shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs containing CCSDS telemetry packets) recorded AM-1 spacecraft and instrument housekeeping telemetry packets (as defined in AM-1 ICD 106) via EDOS/EBnet and the SN, GN, DSN, or WOTS interfaces.	V1-EGS-02 V1-EOC-01
AM1-0090#B	The AM-1 spacecraft shall have the capability to send (in CADU format) and the EOC shall have the capability to receive (in EDUs containing CCSDS telemetry packets and CLCWs) AM-1 SCC, CTIU, and instrument microprocessor memory dump telemetry packets (as defined in AM-1 ICD 106) via EDOS/EBnet and the SN, GN, DSN, or WOTS interfaces.	V1-EGS-02 V1-EOC-01
AM1-0230	The IST toolkit shall have the capability to accept data from a science computing facility that supports PI/TL operations, which include the following data (at a minimum): a. instrument microprocessor memory loads. b. changes in the instrument parameters	V1-ICT-01
AM1-0240	The IST toolkit shall have the capability to provide data to a science computing facility that supports PI/TL instrument operations, which include the following data (at a minimum): a. Microprocessor memory dumps b. Instrument analysis results	V1-ICT-01
AM1-1060#B	The EOC shall be capable of simultaneously receiving all AM-1 telemetry data types.	V1-EOC-01
AM1-1070#B	The EOC shall provide the capability to receive and process	V1-EOC-01

	real-time data received as two 16 kbps data streams.	
AM1-1080-#B	The EOC shall provide the capability to receive and record spacecraft recorder data at rates up to 1.544 Mbps.	V1-EOC-01
ASTER-0020#B	ASTER GDS shall have the capability to send and ECS (EDC DAAC) shall have the capability to receive all algorithms, source code, and documentation used by the ASTER GDS to process ASTER Level 0 data to Level 1 and higher level standard products.	V1-ICT-12
ASTER-0030#B	ECS (EDC DAAC) shall have the capability to send and ASTER GDS shall have the capability to receive all algorithms, source code, and documentation used by ECS to process ASTER Level 1 data to higher level products.	V1-ICT-12
ASTER-0110#B	<p>ECS shall have the capability to send and ASTER GDS shall have the capability to receive DARs for the ASTER instrument. DARs shall contain the following information, at a minimum:</p> <ol style="list-style-type: none"> <li>Observation number</li> <li>Experimenter identification</li> <li>Experimenter address</li> <li>Investigation identification</li> <li>Scientific discipline</li> <li>Observation repetition period</li> <li>Tolerance in observation time</li> <li>User priority</li> <li>Scheduling priority and target of opportunity flag</li> <li>Descriptive text</li> <li>Location data expressed in terms of longitude and latitude as earliest start coordinates and latest stop coordinates</li> <li>Earliest start time</li> <li>Latest stop time</li> <li>Minimum coverage required</li> <li>Maximum coverage desired</li> <li>Associated product generation request and product distribution request</li> <li>Pointing angle</li> <li>Calibration requirements</li> <li>Coordination requirements</li> <li>Data transmission requirements</li> <li>Illumination requirements (day/night)</li> <li>Specific time of observation</li> <li>Sun angle</li> <li>Direct downlink option</li> </ol>	V1-ICT-14
ASTER-0210#A	ASTER GDS shall have the capability to send and ECS shall have the capability to receive ASTER instrument resource profiles and instrument resource deviation lists (when a	V1-ICT-12

	resource profile exists).	
ASTER-0220#A	ECS shall have the capability to send and ASTER GDS shall have the capability to receive a notification when ASTER instrument resource profile information cannot be integrated into the preliminary resource schedule.	V1-ICT-12
ASTER-0240#A	ASTER GDS shall have the capability to send and ECS shall have the capability to receive instrument activity lists and instrument activity deviation lists (when an activity list exists) and any updates thereto.	V1-ICT-12
ASTER-0250#A	ECS shall have the capability to send and ASTER GDS shall have the capability to receive a notification when the ASTER instrument activities cannot be integrated into the detailed activity schedule.	V1-ICT-12
ASTER-0700#B	ASTER GDS shall have the capability to send and ECS (EDC DAAC) shall have the capability to receive Level 1a data products, including associated ancillary data, metadata, and browse.	V1-ICT-12
ASTER-0880	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication requests for ASTER GDS privileges of EOSDIS users.	V1-ICT-14
ASTER-0880#A	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication requests for ASTER GDS privileges of EOSDIS users.	V1-ICT-12
ASTER-0885	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user authentication information specifying ASTER GDS privileges for EOSDIS users.	V1-ICT-14
ASTER-0885#A	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user authentication information specifying ASTER GDS privileges for EOSDIS users.	V1-ICT-12
ASTER-0890	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user authentication requests for ECS privileges of ASTER GDS users.	V1-ICT-14
ASTER-0890#A	ASTER GDS shall have the capability to send and ECS shall have the capability to receive user authentication requests for ECS privileges of ASTER GDS users.	V1-ICT-12
ASTER-0895	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication information specifying ECS privileges for ASTER GDS users.	V1-ICT-14
ASTER-0895#A	ECS shall have the capability to send and ASTER GDS shall have the capability to receive user authentication information specifying ECS privileges for ASTER GDS users.	V1-ICT-12
ASTER-1060	ECS shall provide support for Transport Control Protocol/Internet Protocol (TCP/IP) communications protocols to the U.S. Gateway for ASTER GDS	V1-ICT-14

	communications.	
ASTER-1060#A	ECS shall provide support for Transport Control Protocol/Internet Protocol (TCP/IP) communications protocols to the U.S. Gateway for ASTER GDS communications.	V1-ICT-12
DADS0487#A	Each DADS shall be capable of storing EDOS production data sets (Level 0) for at least one year from the date they are ingested.	V1-SDP-01
DADS0590#B	Each DADS shall support the capability for subsetting, and subsampling data products ordered via the IMS.	V1-SDP-06
DADS0740#B	Each DADS shall provide the capability to subset, subsample, or average data within a granule based on defined criteria to include: a. Geographic location (x, y, z) (spatial with rectangular boundaries) b. Spectral band c. Time d. WRS	V1-SDP-06
DADS0930#B	Each DADS shall provide the IMS an estimate of the staging delay before subsetted, subsampled, or summary data sets are available.	V1-SDP-06
DADS1472#A	Each DADS shall contain the appropriate capacity to respond to contingencies, scheduling problems, and peak loads.	V1-SDP-02 V1-SDP-04
DADS1475#B	Each DADS shall provide tools to the users to perform: a. Format conversion of EOS data b. Subsetting c. Compression (lossy, lossless) d. Data transformation e. Subsampling	V1-SDP-06
DADS2000#A	Each DADS shall receive from the SMC scheduling directives in response to emergency situations.	V1-SDP-04
DADS2200#B	Each DADS shall maintain a list of data which requires some form of data manipulation such as subsetting.	V1-SDP-06
DADS2270#A	Each DADS shall provide, on a scheduled basis, an off-site backup copy of all EOS data which would be impossible or difficult to recover in case of loss (e.g., ancillary data, metadata, command history, algorithms, engineering data, calibration data, systems and applications software, selected data products, depending on need).	V1-SDP-01
DADS2276#A	Each DADS shall have the capability to restore its archive by storing a backup copy of EOS data or backup copy of information required to regenerate the data.	V1-SDP-01

DADS2300#A	Each DADS shall provide a capability for local and offsite backup/restore of system files.	V1-SDP-01
DADS2315#A	Each DADS shall be capable of providing access to data to support the instrument science team(s) in: a. Pre-launch checkout of their instruments b. Pre-launch science checkout c. Development of initial calibration information.	V1-SDP-03
DADS2470#B	Each DADS shall transfer Standard Products and subsetting, subsampled, or summary data to the requester.	V1-SDP-06
DADS2950#A	In case of failure of the automated system, archive media must be capable of being manually mounted at each DADS.	V1-SDP-01
EDOS-A.1.1#B	The DIF shall provide the capability to transfer return link real-time Path Service EDOS Data Units (EDUs) to the EOC. [EDOS generates EDUs by concatenating an EDOS service header (ESH) with each applicable return link path service data unit (SDU)].	V1-ICT-02
EDOS-A.1.2#B	The DIF shall provide the capability to transfer Command Link Control Word EDUs to the EOC.	V1-ICT-02
EDOS-A.1.3#B	The DIF shall provide the capability to receive forward link real-time CLTUs from the EOC.	V1-ICT-02
EOC-0030#B	The EOC shall receive the LTSP and LTIP from the SMC.	V1-EOC-03
EOC-0040#A	The EOC shall interface with EDOS for coordinating EDOS-provided services required by the EOC.	V1-ICT-02
EOC-0040#B	The EOC shall interface with EDOS for coordinating EDOS-provided services required by the EOC.	V1-ICT-02
EOC-1005#B	The EOC shall provide the IMS with spacecraft information, including at a minimum orbit information, for use in DAR generation.	V1-EOC-03
EOC-2010#B	The EOC shall accept from the FDF planning and scheduling information for the EOS spacecraft and instruments, which includes, at a minimum, the following: a. Predicted orbit data including predicted ground track b. EOS spacecraft UAV data c. PSATs d. Spacecraft maneuver information	V1-EOC-03
EOC-2020#A	The EOC shall generate the long-term spacecraft operations plan, based upon, at a minimum, the following: a. LTSP from the IWG. b. LTIP from the IWG. c. Spacecraft maneuvers and other spacecraft activities that have potential to impact mission operations	V1-EOC-03 V1-ICT-13
EOC-2020#B	The EOC shall generate the long-term spacecraft operations plan, based upon, at a minimum, the following: a. LTSP from the IWG.	V1-EOC-03

	<ul style="list-style-type: none"> <li>b. LTIP from the IWG.</li> <li>c. Spacecraft maneuvers and other spacecraft activities that have potential to impact mission operations</li> </ul>	
EOC-2020#B	<p>The EOC shall generate the long-term spacecraft operations plan, based upon, at a minimum, the following:</p> <ul style="list-style-type: none"> <li>a. LTSP from the IWG.</li> <li>b. LTIP from the IWG.</li> <li>c. Spacecraft maneuvers and other spacecraft activities that have potential to impact mission operations</li> </ul>	V1-ICT-13
EOC-2030#A	<p>The EOC shall store and maintain EOS planning and scheduling information, which includes, at a minimum, the following:</p> <ul style="list-style-type: none"> <li>a. IWG science guidelines, as specified in the LTSP and LTIP</li> <li>b. Long-term spacecraft operations plan</li> <li>c. Predicted availability of the spacecraft resources</li> <li>d. Baseline activity profile for each applicable instrument</li> <li>e. Planning and scheduling information received from the FDF</li> <li>f. Preliminary resource schedules, including TDRSS contact times</li> <li>g. Detailed activity schedules, including TDRSS contact times</li> </ul>	V1-EOC-03
EOC-2030#B	<p>The EOC shall store and maintain EOS planning and scheduling information, which includes, at a minimum, the following:</p> <ul style="list-style-type: none"> <li>a. IWG science guidelines, as specified in the LTSP and LTIP</li> <li>b. Long-term spacecraft operations plan</li> <li>c. Predicted availability of the spacecraft resources</li> <li>d. Baseline activity profile for each applicable instrument</li> <li>e. Planning and scheduling information received from the FDF</li> <li>f. Preliminary resource schedules, including TDRSS contact times</li> <li>g. Detailed activity schedules, including TDRSS contact times</li> </ul>	V1-EOC-03
EOC-2070#A	<p>The EOC shall provide the capability to generate a spacecraft subsystem resource profile, based, at a minimum, on the following:</p> <ul style="list-style-type: none"> <li>a. Spacecraft orbit maintenance needs</li> <li>b. Spacecraft navigation needs</li> <li>c. Spacecraft subsystem maintenance needs</li> </ul>	V1-EOC-03
EOC-2070#B	<p>The EOC shall provide the capability to generate a spacecraft subsystem resource profile, based, at a minimum, on the following:</p> <ul style="list-style-type: none"> <li>a. Spacecraft orbit maintenance needs</li> <li>b. Spacecraft navigation needs</li> <li>c. Spacecraft subsystem maintenance needs</li> </ul>	V1-EOC-03
EOC-2160#B	The EOC shall provide plans and schedules to the IMS.	V1-EOC-03
EOC-2170#A	The EOC shall be capable of planning and scheduling	V1-EOC-03



	observations for which time may be specified in fixed or variable terms.	V1-ICT-13
EOC-2170#B	The EOC shall be capable of planning and scheduling observations for which time may be specified in fixed or variable terms.	V1-EOC-03 V1-ICT-13
EOC-2180#A	The EOC shall be capable of planning and scheduling observations for those EOS instruments whose operations may be periodic, intermittent, or continuous.	V1-EOC-03 V1-ICT-13
EOC-2180#B	The EOC shall be capable of planning and scheduling observations for those EOS instruments whose operations may be periodic, intermittent, or continuous.	V1-EOC-03 V1-ICT-13
EOC-2190#B	The EOC shall be capable of planning and scheduling coordinated observations involving multiple instruments.	V1-EOC-03 V1-ICT-13
EOC-2200#A	The EOC shall plan and schedule the management of spacecraft resources that include, at a minimum, the following: b. Communications subsystems d. SCC-stored command table.	V1-EOC-03
EOC-2200#B	The EOC shall plan and schedule the management of spacecraft resources that include, at a minimum, the following: a. Spacecraft recorder b. Communications subsystems c. Thermal and power subsystems d. SCC-stored command table.	V1-EOC-03
EOC-2210#A	The EOC shall have the capability to generate plans and schedules in both human readable and machine usable forms.	V1-EOC-03
EOC-2210#B	The EOC shall have the capability to generate plans and schedules in both human readable and machine usable forms.	V1-EOC-03
EOC-2220#A	The EOC shall identify and resolve conflicts based on, at a minimum, the following: a. Resources needed for each observation or instrument support activity b. Resources needed for each spacecraft subsystem activity, if applicable c. Inter-instrument dependency d. In situ observation dependency e. Priorities set by the LTSP	V1-EOC-03 V1-ICT-13
EOC-2220#B	The EOC shall identify and resolve conflicts based on, at a minimum, the following: a. Resources needed for each observation or instrument support activity b. Resources needed for each spacecraft subsystem activity, if applicable c. Inter-instrument dependency	V1-EOC-03 V1-ICT-13

	d. In situ observation dependency e. Priorities set by the LTSP	
EOC-2230#B	If conflicts cannot be resolved in EOS planning and scheduling, the EOC shall make a choice between competing activities based on negotiations with and between the ICCs or on a decision by the Project Scientist or his designee.	V1-EOC-03 V1-ICT-13
EOC-2240#B	The EOC shall reintroduce applicable requested activities in its planning and scheduling function when the activity did not occur due to a deviation from the schedule.	V1-EOC-03 V1-ICT-13
EOC-2250#A	The EOC shall be capable of performing its planning and scheduling function in batch and incremental interactive-user modes.	V1-EOC-03 V1-ICT-13
EOC-2250#B	The EOC shall be capable of performing its planning and scheduling function in batch and incremental interactive-user modes.	V1-EOC-03 V1-ICT-13
EOC-2260#B	The EOC shall provide "what-if" capabilities for planning and scheduling analysis, and provide them to authorized users, including the ICCs.	V1-EOC-03 V1-ICT-13
EOC-2270#A	The EOC shall accept an instrument resource profile or instrument resource deviation list (when a resource profile exists for the instrument) from each ICC.	V1-ICT-13 V1-ICT-13
EOC-2270#B	The EOC shall accept an instrument resource profile or instrument resource deviation list (when a resource profile exists for the instrument) from each ICC.	V1-EOC-03 V1-ICT-13
EOC-2272#A	For the instruments that have resource deviations lists, the EOC shall build instrument resource profiles by combining the resource deviation lists with the respective baseline resource profiles.	V1-EOC-03 V1-ICT-13
EOC-2272#B	For the instruments that have resource deviations lists, the EOC shall build instrument resource profiles by combining the resource deviation lists with the respective baseline resource profiles.	V1-EOC-03 V1-ICT-13
EOC-2280#A	At least once each week, the EOC shall generate for each spacecraft a preliminary resource schedule that describes all operations currently planned for the following target week.	V1-EOC-03
EOC-2280#B	At least once each week, the EOC shall generate for each spacecraft a preliminary resource schedule that describes all operations currently planned for the following target week.	V1-EOC-03
EOC-2290#A	Whenever the ICCMs instrument resource profile cannot be integrated into a preliminary resource schedule, the EOC shall provide the ICC with a notification that includes, at a minimum, an identification of the conflicting activities and the source of conflict.	V1-EOC-03 V1-ICT-13
EOC-2290#B	Whenever the ICCMs instrument resource profile cannot be	V1-EOC-03

	integrated into a preliminary resource schedule, the EOC shall provide the ICC with a notification that includes, at a minimum, an identification of the conflicting activities and the source of conflict.	V1-ICT-13
EOC-2300#A	The EOC shall build or update the preliminary resource schedule based on the following, at a minimum: a. Existing preliminary resource schedules, if any b. Instrument resource profiles c. Spacecraft subsystems resource profile d. Science guidelines e. Spacecraft operations constraints f. TDRSS schedule	V1-EOC-03 V1-ICT-13
EOC-2300#B	The EOC shall build or update the preliminary resource schedule based on the following, at a minimum: a. Existing preliminary resource schedules, if any b. Instrument resource profiles c. Spacecraft subsystems resource profile d. Science guidelines e. Spacecraft operations constraints f. TDRSS schedule	V1-EOC-03 V1-ICT-13
EOC-2310#A	The EOC shall build a preliminary resource schedule by performing the following: a. Integrating the spacecraft subsystems resource profile and individual instrument resource profiles b. Determining if required resources, including SN resources, are within limits c. Using guidelines established by the LTSP d. Resolving conflicts between the proposed activities	V1-EOC-03 V1-ICT-13
EOC-2310#B	The EOC shall build a preliminary resource schedule by performing the following: a. Integrating the spacecraft subsystems resource profile and individual instrument resource profiles b. Determining if required resources, including SN resources, are within limits c. Using guidelines established by the LTSP d. Resolving conflicts between the proposed activities	V1-EOC-03 V1-ICT-13
EOC-2320#A	The preliminary resource schedule shall include, at a minimum, the following: a. Activity or DAR identifiers b. Resource availability and usage requirements c. Time constraints and alternatives for planned activities d. TDRSS schedule	V1-EOC-03 V1-ICT-13
EOC-2320#B	The preliminary resource schedule shall include, at a minimum, the following: a. Activity or DAR identifiers	V1-EOC-03 V1-ICT-13

	<ul style="list-style-type: none"> <li>b. Resource availability and usage requirements</li> <li>c. Time constraints and alternatives for planned activities</li> <li>d. TDRSS schedule</li> </ul>	
EOC-2350#A	The EOC shall provide the preliminary resource schedule to the ICCs upon generation.	V1-EOC-03 V1-ICT-13
EOC-2350#B	The EOC shall provide the preliminary resource schedule to the ICCs upon generation.	V1-EOC-03 V1-ICT-13
EOC-2370#B	The EOC shall generate TDRSS schedule requests based on the data rate profiles of all the instruments and spacecraft subsystems.	V1-EOC-03
EOC-2400#B	The EOC shall submit the TDRSS schedule requests to the NCC.	V1-EOC-03 V1-ICT-09
EOC-2405#B	The EOC shall accept the forecast TDRSS schedule from the NCC.	V1-EOC-03 V1-ICT-09
EOC-2410#B	The EOC shall accept from the NCC notification of rejection along with the reason for rejection, when all or a portion of the TDRSS schedule request cannot be accommodated.	V1-EOC-03 V1-ICT-09
EOC-2420#B	In response to the rejection of a TDRSS schedule request, the EOC shall have the capability to modify the request for resubmission to the NCC.	V1-EOC-03 V1-ICT-09
EOC-2430#B	The EOC shall, in 95 percent of all cases, generate a preliminary resource schedule for one spacecraft within 2 hours after all required inputs are available.	V1-EOC-03
EOC-2460#A	<p>The EOC shall be capable of generating or updating a spacecraft subsystem activity list based on at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. Existing detailed activity schedule</li> <li>b. Preliminary resource schedule</li> <li>c. Spacecraft subsystem activities identified after the preliminary resource schedule has been generated</li> <li>d. Current predicted orbit data and related information</li> <li>e. Responses to emergency/contingency situations</li> </ul>	V1-EOC-03
EOC-2460#B	<p>The EOC shall be capable of generating or updating a spacecraft subsystem activity list based on at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. Existing detailed activity schedule</li> <li>b. Preliminary resource schedule</li> <li>c. Spacecraft subsystem activities identified after the preliminary resource schedule has been generated</li> <li>d. Current predicted orbit data and related information</li> <li>e. Responses to emergency/contingency situations</li> </ul>	V1-EOC-03
EOC-2480#A	The EOC shall accept from each ICC an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto.	V1-EOC-03 V1-ICT-13

EOC-2480#B	The EOC shall accept from each ICC an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto.	V1-EOC-03 V1-ICT-13
EOC-2482#A	For the instruments that have instrument activity deviation lists, the EOC shall build the instrument activity lists by combining the instrument activity deviation lists with the respective baseline activity profiles.	V1-EOC-03 V1-ICT-13
EOC-2482#B	For the instruments that have instrument activity deviation lists, the EOC shall build the instrument activity lists by combining the instrument activity deviation lists with the respective baseline activity profiles.	V1-EOC-03 V1-ICT-13
EOC-2490#A	For each day the EOC shall be capable of generating or updating a detailed activity schedule for each spacecraft and its instruments, nominally covering the next 7 days.	V1-EOC-03 V1-ICT-13
EOC-2490#B	For each day the EOC shall be capable of generating or updating a detailed activity schedule for each spacecraft and its instruments, nominally covering the next 7 days.	V1-EOC-03 V1-ICT-13
EOC-2510#A	The EOC shall generate a detailed activity schedule for the spacecraft and its instruments by: a. Integrating the spacecraft subsystem activity list and individual instrument activity lists b. Determining if the aggregate resource requirements are within limits d. Ensuring that all the sequencing constraints among the proposed activities are respected e. Scheduling the spacecraft recorder, direct downlink, and communication subsystem operations	V1-EOC-03 V1-ICT-13
EOC-2510#B	The EOC shall generate a detailed activity schedule for the spacecraft and its instruments by: a. Integrating the spacecraft subsystem activity list and individual instrument activity lists b. Determining if the aggregate resource requirements are within limits d. Ensuring that all the sequencing constraints among the proposed activities are respected e. Scheduling the spacecraft recorder, direct downlink, and communication subsystem operations	V1-EOC-03 V1-ICT-13
EOC-2520#B	If additional TDRSS schedule needs are identified while generating or updating a detailed activity schedule, the EOC shall make a request to the NCC for additional TDRSS services.	V1-EOC-03
EOC-2530#B	If the request to the NCC for additional SN services is denied, the EOC shall regenerate or modify a detailed activity schedule to account for the TDRSS service availability constraints.	V1-EOC-03

EOC-2535#B	The EOC shall be capable of scheduling the use of the DSN, GN, or WOTS, in the event of an emergency or contingency that prevents communication through the TDRSS.	V1-EGS-02 V1-EOC-03
EOC-2540#A	The EOC shall notify the ICC of any instrument activities that cannot be integrated into a detailed activity schedule.	V1-EOC-03 V1-ICT-13
EOC-2540#B	The EOC shall notify the ICC of any instrument activities that cannot be integrated into a detailed activity schedule.	V1-EOC-03 V1-ICT-13
EOC-2550#A	The detailed activity schedule shall include, at a minimum, the following: a. Instrument activities b. Spacecraft activities necessary to support all instrument activities c. Spacecraft activities necessary for the spacecraft subsystem maintenance d. Spacecraft resource requirements for each activity e. Traceability of instrument activities to DARs	V1-EOC-03 V1-ICT-13
EOC-2550#B	The detailed activity schedule shall include, at a minimum, the following: a. Instrument activities b. Spacecraft activities necessary to support all instrument activities c. Spacecraft activities necessary for the spacecraft subsystem maintenance d. Spacecraft resource requirements for each activity e. Traceability of instrument activities to DARs	V1-EOC-03 V1-ICT-13
EOC-2555#A	The EOC shall evaluate the impact of a TOO observation, , or a change to a scheduled observation, on other previously scheduled activities.	V1-EOC-03 V1-ICT-13
EOC-2555#B	The EOC shall evaluate the impact of a TOO observation, , or a change to a scheduled observation, on other previously scheduled activities.	V1-EOC-03 V1-ICT-13
EOC-2570#B	In support of a TOO observation or late change, the EOC shall update the detailed activity schedule within 1 hour after receipt of the update to the corresponding instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument), if the update does not affect existing detailed activity schedule events or create new conflicts.	V1-EOC-03 V1-ICT-13
EOC-2590#B	In support of a TOO observation or a late change, the EOC shall update the detailed activity schedule within 10 hours after the receipt of the update of the corresponding instrument activity list (or instrument activity deviation list), if the update affects existing detailed activity schedule events or creates new conflicts.	V1-EOC-03 V1-ICT-13
EOC-2620#A	The EOC shall provide the ICC with the detailed activity	V1-EOC-03

	schedule and any updates upon generation.	V1-ICT-13
EOC-2620#B	The EOC shall provide the ICC with the detailed activity schedule and any updates upon generation.	V1-EOC-03 V1-ICT-13
EOC-2630#B	The EOC shall, in 95 percent of all cases, generate a detailed activity schedule for the spacecraft within 2 hours after all required inputs are available.	V1-EOC-03 V1-ICT-13
EOC-3015#B	The EOC shall accept SCC flight software updates from the SDVF.	V1-EOC-03
EOC-3017#B	The EOC shall accept from the FDF parameters necessary for spacecraft command data generation, including the following: a. Navigational operations parameters b. Spacecraft maneuver parameters	V1-EOC-03
EOC-3020#A	The EOC shall accept from the ICC instrument loads, SCC-stored instrument commands, and SCC-stored instrument tables as well as the associated information that includes at a minimum the following: a. Instrument identifier b. Schedule identifier, if applicable c. Identification of commands that could impact spacecraft or instrument safety (i.e., critical commands)	V1-EOC-03 V1-ICT-13
EOC-3020#B	The EOC shall accept from the ICC instrument loads, SCC-stored instrument commands, and SCC-stored instrument tables as well as the associated information that includes at a minimum the following: a. Instrument identifier b. Schedule identifier, if applicable c. Identification of commands that could impact spacecraft or instrument safety (i.e., critical commands)	V1-EOC-03 V1-ICT-13
EOC-3024#B	The EOC shall validate the expected resource usage.	V1-EOC-03
EOC-3030#A	The EOC shall authenticate the originator of command information from the ICCs.	V1-EOC-02 V1-EOC-03 V1-ICT-13
EOC-3030#B	The EOC shall authenticate the originator of command information from the ICCs.	V1-EOC-02 V1-EOC-03 V1-ICT-13
EOC-3050#A	At least once per day, the EOC shall generate SCC-stored spacecraft commands and SCC-stored spacecraft tables based on the detailed activity schedule.	V1-EOC-03
EOC-3050#B	At least once per day, the EOC shall generate SCC-stored spacecraft commands and SCC-stored spacecraft tables based on the detailed activity schedule.	V1-EOC-03
EOC-3070#B	The EOC shall generate SCC-stored spacecraft commands and SCC-stored spacecraft tables for 24 hours of spacecraft operations in less than 1 hour.	V1-EOC-03

EOC-3080#A	The EOC shall generate, validate, and store preplanned spacecraft commands for later use in emergency situations to protect the health and safety of the spacecraft.	V1-EOC-03
EOC-3080#B	The EOC shall generate, validate, and store preplanned spacecraft commands for later use in emergency situations to protect the health and safety of the spacecraft.	V1-EOC-03
EOC-3086#B	The EOC shall generate a command-to-memory location map for SCC-stored command loads.	V1-EOC-03
EOC-3090#A	As frequently as necessitated by the detailed activity schedule, the EOC shall build a spacecraft and instrument memory load, which includes as many of the following as needed: a. SCC-stored spacecraft and instrument commands b. SCC-stored spacecraft and instrument tables c. Instrument loads d. SCC software updates.	V1-EOC-03
EOC-3090#B	As frequently as necessitated by the detailed activity schedule, the EOC shall build a spacecraft and instrument memory load, which includes as many of the following as needed: a. SCC-stored spacecraft and instrument commands b. SCC-stored spacecraft and instrument tables c. Instrument loads d. SCC software updates.	V1-EOC-03
EOC-3160#A	The EOC shall generate operational reports.	V1-EOC-03
EOC-3160#B	The EOC shall generate operational reports including, at a minimum, the following: a. SCC-stored command load report b. Integrated report having orbital events, command execution times, and TDRS contacts with candidate loads. \\1431 0\\	V1-EOC-03
EOC-3200#B	The EOC shall accept from the ICC instrument preplanned command groups for issuance by the EOC in the event of an anomaly that requires an immediate response or in the event that the ICC is unable to command the instrument.	V1-EOC-03 V1-ICT-13
EOC-3210#A	The EOC shall store and maintain preplanned instrument commands for all instruments on the spacecraft.	V1-EOC-03 V1-ICT-13
EOC-3210#B	The EOC shall store and maintain preplanned instrument commands for all instruments on the spacecraft.	V1-EOC-03 V1-ICT-13
EOC-3225#B	In support of a TOO observation or late change, the EOC shall prepare the corresponding integrated load and/or real-time instrument command set within 15 minutes of receipt of the SCC-stored instrument commands, SCC-stored instrument tables, or instrument load from the ICC, if the observation does not impact previously scheduled activities.	V1-EOC-03 V1-ICT-13
EOC-3226#B	In support of a TOO observation or late change, the EOC shall prepare the corresponding integrated load and/or real-time instrument command set within 1 hour of receipt of the SCC-	V1-EOC-03 V1-ICT-13



	stored instrument commands, SCC-stored instrument tables, or instrument load from the ICC, if the observation impacts previously scheduled activities.	
EOC-3238#A	Within 1 minute of detecting a predefined emergency/contingency situation, the EOC shall prepare spacecraft and instrument commands for transmission to EDOS.	V1-EGS-02 V1-EOC-02 V1-EOC-03
EOC-3238#B	Within 1 minute of detecting a predefined emergency/contingency situation, the EOC shall prepare spacecraft and instrument commands for transmission to EDOS.	V1-EGS-02 V1-EOC-02 V1-EOC-03
EOC-3240#B	The EOC shall be capable of producing spacecraft and instrument memory loads covering 24 hours of spacecraft operation in less than 1 hour.	V1-EOC-03
EOC-4005#A	The EOC shall be capable of transmitting commands to the EOS spacecraft via EDOS using the: a. SN b. GN, DSN, WOTS (for contingency or emergency operations)	V1-EGS-02 V1-EOC-02
EOC-4005#B	The EOC shall be capable of transmitting commands to the EOS spacecraft via EDOS using the: a. SN b. GN, DSN, WOTS (for contingency or emergency operations)	V1-EGS-02 V1-EOC-02
EOC-4008#A	The EOC shall be capable of transmitting commands via Ecom.	V1-EOC-02
EOC-4008#B	The EOC shall be capable of transmitting commands via Ecom.	V1-EOC-02
EOC-4010#A	For each spacecraft and its instruments, the EOC shall prepare uplink data that conform to the CCSDS Telecommand Standard.	V1-EOC-02 V1-ICT-02
EOC-4010#B	For each spacecraft and its instruments, the EOC shall prepare uplink data that conform to the CCSDS Telecommand Standard.	V1-EOC-02 V1-ICT-02
EOC-4015#A	The EOC shall provide the capability to build real-time commands based on operator input and validate the generated commands.	V1-EOC-02 V1-ICT-13
EOC-4015#B	The EOC shall provide the capability to build real-time commands based on operator input and validate the generated commands.	V1-EOC-02 V1-ICT-13
EOC-4018#A	The EOC shall validate instrument real-time command groups.	V1-EOC-02 V1-ICT-02
EOC-4018#A	The EOC shall validate instrument real-time command groups.	V1-ICT-02
EOC-4018#B	The EOC shall validate instrument real-time command groups.	V1-EOC-02

		V1-ICT-02
EOC-4020#A	The EOC shall merge the real-time commands supplied by the spacecraft operator, command groups, and the spacecraft and instrument memory loads into one uplink stream.	V1-EOC-02 V1-ICT-02
EOC-4020#B	The EOC shall merge the real-time commands supplied by the spacecraft operator, command groups, and the spacecraft and instrument memory loads into one uplink stream.	V1-EOC-02 V1-ICT-02
EOC-4060#A	The EOC shall provide the capability to send Ground Configuration Message Requests to NCC.	V1-EOC-03 V1-ICT-09
EOC-4060#B	The EOC shall provide the capability to exchange messages with the NCC, which include at a minimum status and reconfiguration messages.	V1-EOC-03 V1-ICT-09
EOC-4100#A	The EOC shall provide the capability to control the uplink of critical commands by requiring a second positive response from the operator.	V1-EOC-02
EOC-4100#B	The EOC shall provide the capability to control the uplink of critical commands by requiring a second positive response from the operator.	V1-EOC-02 V1-ICT-13
EOC-4120#B	The EOC shall provide the capability to verify via telemetry the successful receipt of all commands by the spacecraft and instruments.	V1-EOC-02
EOC-4125#B	The EOC shall provide the capability to verify via telemetry the successful execution of spacecraft commands.	V1-EOC-02
EOC-4130#A	The EOC shall provide the capability to receive and evaluate command transmission status information from EDOS.	V1-EOC-02 V1-ICT-02
EOC-4130#B	The EOC shall provide the capability to receive and evaluate command transmission status information from EDOS.	V1-EOC-02 V1-ICT-02
EOC-4140#A	The EOC shall generate command-related event messages for display and for history logging to include: a. Command uplink status	V1-EOC-02
EOC-4160#B	The EOC shall maintain a record of the uplink status of all spacecraft and instrument memory loads and real-time commands.	V1-EOC-02
EOC-4166#B	The EOC shall provide the ICC with instrument uplink status, which includes at a minimum the following: a. Receipt at the EOC b. Validation status c. Receipt at the spacecraft and instrument	V1-EOC-02 V1-ICT-13
EOC-4168#B	The EOC shall provide the ICCs with instrument command notification messages, when emergency/contingency instrument commands are issued. \\1333, 946 \\	V1-ICT-13
EOC-4200#A	The EOC shall support several uplink rates to the spacecraft, which include at a minimum the following: a. 10 kilobits per second (kbps) (SSA uplink)	V1-EOC-02 V1-ICT-02

	<ul style="list-style-type: none"> <li>b. 1 kbps (SMA uplink)</li> <li>c. 125 bits per second (bps) (SSA uplink during contingency operations)</li> <li>d. 2 kbps (emergency operations via S-band DSN link)</li> </ul>	
EOC-4200#B	<p>The EOC shall support several uplink rates to the spacecraft, which include at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. 10 kilobits per second (kbps) (SSA uplink)</li> <li>b. 1 kbps (SMA uplink)</li> <li>c. 125 bits per second (bps) (SSA uplink during contingency operations)</li> <li>d. 2 kbps (emergency operations via S-band DSN link)</li> </ul>	<p>V1-EOC-02 V1-ICT-02</p>
EOC-4210#B	<p>The EOC shall process and output a single real-time emergency command within 500 milliseconds of receiving the request from an ICC.</p>	V1-ICT-13
EOC-5010#A	<p>The EOC shall receive from EDOS the following telemetry data types in CCSDS packets containing:</p> <ul style="list-style-type: none"> <li>a. Real-time spacecraft and instrument housekeeping data</li> <li>b. Spacecraft recorder housekeeping data</li> <li>c. SCC memory dump data</li> </ul>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5010#B	<p>The EOC shall receive from EDOS the following telemetry data types in CCSDS packets containing:</p> <ul style="list-style-type: none"> <li>a. Real-time spacecraft and instrument housekeeping data</li> <li>b. Spacecraft recorder housekeeping data</li> <li>c. SCC memory dump data</li> </ul>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5012#B	<p>The EOC shall be capable of processing spacecraft recorder data for all periods of time during which real time data was not received.</p>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5015#A	<p>The EOC shall be capable of simultaneously receiving all EOS telemetry data types.</p>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5015#B	<p>The EOC shall be capable of simultaneously receiving all EOS telemetry data types.</p>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5020#A	<p>The EOC shall receive and process spacecraft telemetry data during spacecraft launch.</p>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5020#B	<p>The EOC shall receive and process spacecraft telemetry data during spacecraft launch.</p>	<p>V1-EOC-01 V1-ICT-02</p>
EOC-5030#A	<p>The EOC shall provide the capability to receive and process non-telemetry data, which includes, at a minimum, the following:</p> <ul style="list-style-type: none"> <li>a. Messages from the NCC.</li> </ul>	<p>V1-EOC-02 V1-EOC-03 V1-ICT-09</p>
EOC-5030#B	<p>The EOC shall provide the capability to receive and process, non-telemetry data, which includes at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. Messages from the NCC</li> <li>b. Monitor blocks from the DSN, GN, and WOTS</li> <li>c. Status messages from EDOS</li> </ul>	<p>V1-EGS-02 V1-EOC-01 V1-EOC-02 V1-EOC-03 V1-ICT-09</p>

EOC-5045#B	The EOC shall be capable of supporting all EOS telemetry formats for spacecraft and instrument housekeeping data.	V1-EOC-01 V1-ICT-02
EOC-5050#B	The EOC shall provide the capability to receive and report data quality information with the incoming CCSDS packets as provided by EDOS.	V1-EOC-01 V1-EOC-02 V1-ICT-02
EOC-5070#A	The EOC shall provide the capability to detect and report gaps in the telemetry data it receives.	V1-EOC-01
EOC-5070#B	The EOC shall provide the capability to detect and report gaps in the telemetry data it receives.	V1-EOC-01
EOC-5080#A	The EOC shall provide the capability to decommutate spacecraft and instrument housekeeping data.	V1-EOC-01 V1-ICT-02
EOC-5080#B	The EOC shall provide the capability to decommutate spacecraft and instrument housekeeping data.	V1-EOC-01 V1-ICT-02
EOC-5090#A	The EOC shall perform the necessary engineering unit conversion on the decommutated housekeeping data.	V1-EOC-01 V1-ICT-02
EOC-5090#B	The EOC shall perform the necessary engineering unit conversion, derived parameter generation, and digital and discrete state determination on the decommutated housekeeping data.	V1-EOC-01 V1-ICT-02
EOC-5100#A	The EOC shall provide the capability to perform limit checking on all non discrete parameters within the real-time telemetry, flagging all parameters that have limit violations.	V1-EOC-01 V1-ICT-02
EOC-5100#B	The EOC shall provide the capability to perform limit checking on all non discrete parameters within the real-time telemetry, flagging all parameters that have limit violations.	V1-EOC-01 V1-ICT-02
EOC-5105#B	The EOC shall support the definition of multiple sets of boundary limits for each non-discrete parameter, with each set including definitions for one or more upper and lower boundaries.	V1-EOC-01 V1-ICT-02
EOC-5110#A	The EOC shall provide the capability to generate an event message whenever a predetermined number of limit violations for a parameter is detected.	V1-EOC-01
EOC-5110#B	The EOC shall provide the capability to generate an event message whenever a predetermined number of limit violations for a parameter is detected.	V1-EOC-01
EOC-5120#B	The EOC shall provide the capability to accept temporary or permanent changes to limit definitions. \\, 1418, 1428\\	V1-EOC-01
EOC-5130#B	The EOC shall determine the best estimate for SCC memory contents.	V1-EOC-02
EOC-5180#B	The EOC shall provide the capability to extract specified subsets of the telemetry stream.	V1-EOC-01
EOC-5185#B	The EOC shall provide the FDF with a subset of telemetry stream, which includes the following: a. Attitude sensor data	V1-ICT-10

	b. Navigation telemetry data c. Spacecraft maneuver telemetry data	
EOC-5190#B	The EOC shall provide the capability to store spacecraft recorder housekeeping data as they are received from EDOS in CCSDS packets.	V1-EOC-01 V1-ICT-02
EOC-5220#B	The EOC shall be able to process real-time data at rates up to 50 kbps per spacecraft.	V1-EOC-01 V1-ICT-02
EOC-5230#B	The EOC shall be able to receive and record spacecraft recorder data at rates up to 1.544 Mbps.	V1-EOC-01 V1-ICT-02
EOC-5240#B	The EOC shall be able to process history and archived spacecraft recorder data at rates up to 150 kbps.	V1-EOC-01 V1-ICT-02
EOC-6010#A	The EOC shall provide the capability to perform analysis on real-time telemetry data and spacecraft recorder housekeeping data.	V1-EOC-04
EOC-6010#B	The EOC shall provide the capability to perform analysis on real-time telemetry data, spacecraft recorder housekeeping data, and data from the EOC history log.	V1-EOC-04
EOC-6020#A	The EOC shall accept instrument status data from each ICC.	V1-ICT-13
EOC-6020#B	The EOC shall accept instrument status data from each ICC.	V1-ICT-13
EOC-6050#A	The EOC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	V1-EOC-04
EOC-6050#B	The EOC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	V1-EOC-04
EOC-6060#A	The EOC shall provide the capability to plot a specified parameter against another parameter or against time.	V1-EOC-04 V1-ICT-13
EOC-6060#B	The EOC shall provide the capability to plot a specified parameter against another parameter or against time.	V1-EOC-04 V1-ICT-13
EOC-6070#A	The EOC shall provide the capability to time-correlate related spacecraft parameters.	V1-EOC-04 V1-ICT-13
EOC-6070#B	The EOC shall provide the capability to time-correlate related spacecraft parameters.	V1-EOC-04 V1-ICT-13
EOC-6100#A	The EOC shall provide the capability to perform trend	V1-EOC-04

	analysis on spacecraft and instrument housekeeping parameters.	V1-ICT-13
EOC-6100#B	The EOC shall provide the capability to perform trend analysis on spacecraft and instrument housekeeping parameters.	V1-EOC-04 V1-ICT-13
EOC-6110#A	The EOC shall provide the capability to monitor and evaluate the spacecraft functions, resources, and performance including, at a minimum, the following: a. Stored command processing.	V1-EOC-04
EOC-6110#B	The EOC shall provide the capability to monitor and evaluate the spacecraft functions, resources, and performance, including at a minimum the following: a. Stored command processing b. Spacecraft recorders c. Safe mode processes d. Electrical power subsystem e. Propulsion subsystem	V1-EOC-04
EOC-6130#B	The EOC shall monitor the configuration of the spacecraft and instruments.	V1-EOC-04 V1-ICT-13
EOC-6140#B	The EOC shall provide the capability to maintain a record of the spacecraft and instrument configuration, including the state of all spacecraft subsystems and instruments.	V1-EOC-04 V1-ICT-13
EOC-6150#B	The EOC shall provide the capability to maintain a master ground image of the SCC spacecraft memory.	V1-EOC-01 V1-EOC-02
EOC-6160#B	The EOC shall provide the capability to compare the master ground image and the SCC memory dump.	V1-EOC-01 V1-EOC-02 V1-ICT-13
EOC-6195#A	The EOC shall provide the capability to detect, isolate, and report failures and anomalies at the spacecraft subsystem level, and the spacecraft level.	V1-EOC-04
EOC-6195#B	The EOC shall provide the capability to detect, isolate, and report failures and anomalies at the spacecraft subsystem level, and the spacecraft level.	V1-EOC-04
EOC-6200#B	The EOC shall detect, isolate, and participate in the resolution of failures and anomalies involving the spacecraft and instruments, communications with the spacecraft, and ground operations support of the spacecraft.	V1-ICT-13
EOC-6210#B	The EOC shall be capable of providing recommended courses of actions for selected contingency situations.	V1-ICT-13
EOC-7010#A	The EOS Data Base spacecraft and instrument database, referred to as the Project Data Base (PDB) shall include at a minimum the following: a. Housekeeping data formats b. Housekeeping data parameter descriptions	V1-EOC-02 V1-ICT-13

	<ul style="list-style-type: none"> <li>c. Command descriptions</li> <li>d. Syntactical rules for commands and operator directives</li> <li>e. Operator directives</li> <li>f. Display formats</li> <li>g. Planning and scheduling definitions and constraints</li> <li>i. Report formats</li> <li>j. NCC configuration codes</li> <li>l. Telemetry parameter limits</li> <li>m. Characteristics of spacecraft and its instruments</li> <li>n. Command validation parameters</li> <li>o. Operations procedures</li> </ul>	
EOC-7010#B	<p>The EOS Data Base spacecraft and instrument database, referred to as the Project Data Base (PDB) shall include at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. Housekeeping data formats</li> <li>b. Housekeeping data parameter descriptions</li> <li>c. Command descriptions</li> <li>d. Syntactical rules for commands and operator directives</li> <li>e. Operator directives</li> <li>f. Display formats</li> <li>g. Planning and scheduling definitions and constraints</li> <li>i. Report formats</li> <li>j. NCC configuration codes</li> <li>l. Telemetry parameter limits</li> <li>m. Characteristics of spacecraft and its instruments</li> <li>n. Command validation parameters</li> <li>o. Operations procedures</li> </ul>	<p>V1-EOC-02 V1-ICT-13</p>
EOC-7015#A	The EOC shall receive from the ICCs instrument-specific portion of the PDB and/or any updates thereto.	V1-ICT-13
EOC-7015#B	The EOC shall receive from the ICCs instrument-specific portion of the PDB and/or any updates thereto.	V1-ICT-13
EOC-7020#B	The EOC shall maintain the latest two versions of the PDB.	V1-ICT-13
EOC-7025#A	The EOC shall provide the capabilities to generate and modify the PDB.	V1-ICT-13
EOC-7030#A	The EOC shall be capable of syntax and structure checking of the PDB.	V1-ICT-13
EOC-7030#B	The EOC shall be capable of syntax and structure checking of the PDB.	V1-ICT-13
EOC-7045#A	The EOC shall generate a report identifying any problems with the contents of the PDB.	V1-ICT-13
EOC-7045#B	The EOC shall generate a report identifying any problems with the contents of the PDB.	V1-ICT-13
EOC-7060#A	The EOC shall maintain a history log for the spacecraft and instruments for the most recent 7 days, including at a minimum the following:	V1-EOC-04

	<ul style="list-style-type: none"> <li>a. All messages sent and received</li> <li>b. Telemetry data</li> <li>c. Operator requests/directives</li> <li>d. Real-time commands</li> <li>e. Stored command loads</li> <li>f. Memory loads and dumps</li> <li>g. Limits violations</li> <li>h. Error conditions</li> <li>i. Warnings</li> <li>k. Spacecraft and instrument status information</li> <li>l. Executed schedules</li> <li>m. Analysis results</li> <li>n. Responses to operator requests</li> <li>o. User interface language procedures as they were executed</li> <li>p. EOC reconfiguration information</li> <li>q. Master ground image</li> </ul>	
EOC-7060#B	<p>The EOC shall maintain a history log for the spacecraft and instruments for the most recent 7 days, including at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. All messages sent and received</li> <li>b. Telemetry data</li> <li>c. Operator requests/directives</li> <li>d. Real-time commands</li> <li>e. Stored command loads</li> <li>f. Memory loads and dumps</li> <li>g. Limits violations</li> <li>h. Error conditions</li> <li>i. Warnings</li> <li>j. Alarms</li> <li>k. Spacecraft and instrument status information</li> <li>l. Executed schedules</li> <li>m. Analysis results</li> <li>n. Responses to operator requests</li> <li>o. User interface language procedures as they were executed</li> <li>p. EOC reconfiguration information</li> <li>q. Master ground image</li> </ul>	V1-EOC-04
EOC-7120#A	The EOC shall be capable of extracting data sets from the history log by specifying time and data type to include as a minimum: telemetry, command, non-telemetry messages, operator directives, events, or limits violations.	V1-EOC-01 V1-EOC-04 V1-ICT-13
EOC-7120#B	The EOC shall be capable of extracting data sets from the history log by specifying time and data type to include as a minimum: telemetry, command, non-telemetry messages, operator directives, events, or limits violations.	V1-EOC-01 V1-EOC-04 V1-ICT-13
EOC-8010#A	The EOC shall have the capability to schedule its systems and	V1-EOC-02



	communications interfaces that are used for instrument operations and for other activities, including maintenance, upgrade, sustaining engineering, testing, and training.	
EOC-8010#B	The EOC shall have the capability to schedule its systems and communications interfaces that are used for instrument operations and for other activities, including maintenance, upgrade, sustaining engineering, testing, and training.	V1-EOC-02
EOC-8020#B	The EOC shall participate in the scheduling of interface and end-to-end tests with the external elements involved, including the ICCs, the spacecraft simulator(s), the SMC for other EOS elements, and EDOS for MO&DSD data delivery systems.	V1-ICT-13
EOC-8090#A	The EOC shall establish its configuration, including functional connectivity within the EOC and between the EOC and external interfaces, for multiple spacecraft and instrument operations, tests, and maintenance.	V1-EOC-02 V1-EOC-05
EOC-8090#B	The EOC shall establish its configuration, including functional connectivity within the EOC and between the EOC and external interfaces, for multiple spacecraft and instrument operations, tests, and maintenance.	V1-EOC-02 V1-EOC-05
EOC-8100#B	The EOC shall perform prepass operational readiness tests on the EOC and between the EOC and external interfaces (via test messages).	V1-EOC-05 V1-ICT-02
EOC-8110#A	The EOC shall support ongoing operations.	V1-EOC-05 V1-ICT-02 V1-ICT-13
EOC-8110#B	The EOC shall support reconfiguration to work around faults and anomalies without interrupting other ongoing operations.	V1-EOC-05
EOC-8130#A	The EOC shall allow operator override for reconfiguration requests that violate operational constraints.	V1-EOC-05
EOC-8130#B	The EOC shall allow operator override for reconfiguration requests that violate operational constraints.	V1-EOC-05
EOC-8140#A	The EOC shall manage initialization and shutdown of EOC functions.	V1-EOC-05
EOC-8140#B	The EOC shall manage initialization and shutdown of EOC functions.	V1-EOC-05
EOC-8160#B	The EOC shall alert the operator when its status changes or when data errors exceed operator-specified levels.	V1-EOC-05
EOC-8220#B	The EOC shall manage its faults including at a minimum the following: a. Fault identification and reporting b. Identification of recommended solutions c. Log of fault activities through resolution	V1-EOC-05
EOC-8240#B	The EOC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their	V1-EOC-05

	operations from affecting other operations.	
EOC-8250#B	The EOC shall participate in the resolution of failures and anomalies involving the interfaces of the EOC.	V1-EOC-05
EOC-8260#B	The EOC shall provide tests for validating, verifying, and checking functional capabilities and performance for EOC functions after the EOC has been repaired or upgraded.	V1-EOC-05
EOC-8285#A	The EOC shall support instrument integration activities associated with the spacecraft prior to launch.	V1-ICT-13
EOC-8285#B	The EOC shall support instrument integration activities associated with the spacecraft prior to launch.	V1-ICT-13
EOC-8290#B	The EOC shall use simulations and test functions of the spacecraft simulator(s) to check out the EOC functions.	V1-EOC-01 V1-EOC-04
EOC-8320#B	The EOC shall support spacecraft and instrument tests at the integration site and at the launch site.	V1-EOC-01 V1-EOC-04 V1-ICT-13
EOC-9010#A	The EOC shall provide the capability for the operator to control the EOC functions and components, utilizing a combination of input devices.	V1-EOC-05
EOC-9010#B	The EOC shall provide the capability for the operator to control the EOC functions and components, utilizing a combination of input devices.	V1-EOC-05
EOC-9020#A	The EOC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each EOC function.	V1-EOC-05
EOC-9020#B	The EOC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each EOC function.	V1-EOC-05
EOC-9025#A	The EOC shall provide the capability to notify the operator of events and alarms.	V1-EOC-01 V1-EOC-05 V1-ICT-13
EOC-9025#B	The EOC shall provide the capability to notify the operator of events and alarms.	V1-EOC-01 V1-EOC-05 V1-ICT-13
EOC-9040#A	The EOC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following: a. Evaluate algebraic and logical expressions b. Exercise decision logic (IF statements) c. Automated execution of a set of multiple directives (i.e., user interface language procedure) d. Internally branch to other parts of the user interface	V1-EOC-01 V1-EOC-04

	<p>language procedure</p> <p>e. Next user interface language procedures within procedures</p> <p>f. Initiate other EOC applications</p>	
EOC-9040#B	<p>The EOC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following:</p> <p>a. Evaluate algebraic and logical expressions</p> <p>b. Exercise decision logic (IF statements)</p> <p>c. Automated execution of a set of multiple directives (i.e., user interface language procedure)</p> <p>d. Internally branch to other parts of the user interface language procedure</p> <p>e. Next user interface language procedures within procedures</p> <p>f. Initiate other EOC applications</p>	<p>V1-EOC-01</p> <p>V1-EOC-04</p>
EOC-9080#A	The EOC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V1-EOC-05
EOC-9080#B	The EOC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V1-EOC-05
EOC-9110#A	The EOC shall respond to operator inputs within 0.5 seconds.	V1-EOC-05
EOC-9110#B	The EOC shall respond to operator inputs within 0.5 seconds.	V1-EOC-05
EOSD0015#B	ECS shall use and support the Deep Space Network (DSN), the Ground Network (GN), and the Wallops Orbital Tracking Station (WOTS), via the EDOS/EBnet interface, as backup of the SN, to obtain forward and return link data communications.	V1-EGS-02
EOSD0020#A	ECS shall use and support the EDOS/EBnet interface to obtain the data capture, data archival, and data distribution services needed to achieve full end-to-end ECS functionality.	<p>V1-ICT-02</p> <p>V1-SDP-01</p> <p>V1-SDP-03</p> <p>V1-SDP-04</p>
EOSD0020#B	ECS shall use and support the EDOS/EBnet interface to obtain the data capture, data archival, and data distribution services needed to achieve full end-to-end ECS functionality.	V1-ICT-02
EOSD0025#A	ECS shall use EBnet for flight operations data transfers.	<p>V1-EOC-01</p> <p>V1-EOC-02</p>
EOSD0025#B	ECS shall use EBnet for flight operations data transfers.	<p>V1-EOC-01</p> <p>V1-EOC-02</p>
EOSD0500#A	<p>ECS shall perform the following major functions:</p> <p>a. EOS Mission Planning and Scheduling</p> <p>b. EOS Mission Operations</p> <p>c. Command and Control</p> <p>d. Communications and Networking</p> <p>e. Data Input</p> <p>f. Data Processing</p> <p>g. Data Storage</p>	<p>V1-EOC-02</p> <p>V1-SDP-03</p>

	<ul style="list-style-type: none"> <li>h. Data Distribution</li> <li>i. Information Management</li> <li>j. End-to-End Fault Management</li> <li>k. System Management</li> </ul>	
EOSD0500#B	<p>ECS shall perform the following major functions:</p> <ul style="list-style-type: none"> <li>a. EOS Mission Planning and Scheduling</li> <li>b. EOS Mission Operations</li> <li>c. Command and Control</li> <li>d. Communications and Networking</li> <li>e. Data Input</li> <li>f. Data Processing</li> <li>g. Data Storage</li> <li>H. Data Distribution</li> </ul>	V1-EOC-02
EOSD0720#A	Each ECS element shall be able to validate at any time during the life-time of the ECS that the ECS element primary functional performance is consistent with pre-defined operational benchmark tests.	V1-SDP-02
EOSD0730#A	<p>Each ECS element shall be capable of verifying the fidelity of the ECS element interface to:</p> <ul style="list-style-type: none"> <li>a. Other ECS elements at any time during the lifetime of the ECS</li> <li>b. Entities external to ECS at any time during the lifetime of the ECS</li> </ul>	V1-SDP-03
EOSD1000#B	ECS elements shall contribute a loop delay of not greater than 2.5 seconds of the total system delay of five (5) seconds for emergency real-time commands, not including the time needed for command execution. The loop delay is measured from the originator to the spacecraft/instrument and back and only applies when a Tracking and Data Relay Satellite System (TDRSS) link is available for contact to the spacecraft.	V1-EOC-02
EOSD1010#A	ECS shall support daily data volume, processing load, storage volume, instrument support, and data traffic as derivable from and specified in Appendix C and D.	<p>V1-SDP-02</p> <p>V1-SDP-03</p> <p>V1-SDP-04</p>
EOSD1480#B	ECS shall receive from the resident EOS Project Scientist the IWGs Long Term Science Plan (LTSP) and updates as required.	V1-EOC-03

EOSD1500#B	ECS shall interface with the EOS spacecraft and with the EOS instruments in order to perform mission operations, including planning, scheduling, commanding, and monitoring functions.	V1-EOC-02 V1-ICT-13
EOSD1502#A	ECS elements shall use EBnet for data communications for the following types of data: a. Production data sets (Level 0 data) b. Expedited data sets c. Real-time data (for health and safety) d. Command data e. Data requested from back-up archive f. TDRSS schedule requests g. Data exchange with the FDF h. Production Data Transfers between DAACs i. Management Data exchange with SMC j. Data Products Exchange with ADCs, IPs, and Others	V1-EOC-01 V1-EOC-02 V1-EOC-04 V1-ICT-02 V1-SDP-01 V1-SDP-03 V1-EOC-01
EOSD1502#B	ECS elements shall use EBnet for data communications for the following types of data: a. Production data sets (Level 0 data) b. Expedited data sets c. Real-time data (for health and safety) d. Command data e. Data requested from back-up archive f. TDRSS schedule requests g. Data exchange with the FDF h. Production Data Transfers between DAACs i. Management Data exchange with SMC j. Data Products Exchange with ADCs, IPs, and Others	V1-EOC-02 V1-EOC-04 V1-ICT-02 V1-ICT-10
EOSD1505#B	ECS elements shall receive EOS spacecraft predicted orbit data and post pass ephemeris determination data from the FDF.	V1-ICT-10
EOSD1510#B	ECS elements shall provide the FDF with subsets of spacecraft housekeeping data related to the on-board attitude and orbit systems.	V1-ICT-10
EOSD1520#B	ECS elements shall receive TDRSS schedules from the Network Control Center (NCC).	V1-EOC-03 V1-ICT-09
EOSD1530#B	ECS elements shall submit TDRSS schedule requests to the NCC.	V1-EOC-03 V1-ICT-09
EOSD1605#A	ECS elements shall receive from EDOS telemetry data, including housekeeping, engineering, ancillary, and science data from EOS instruments and spacecraft.	V1-EOC-01 V1-ICT-02
EOSD1605#B	ECS elements shall receive from EDOS telemetry data, including housekeeping,	V1-EOC-01 V1-ICT-02

	engineering, ancillary, and science data from EOS instruments and spacecraft.	
EOSD1710	ECS elements shall exchange with ADCs/ODCs, such as NOAA and other data processing and archiving facilities, information including the following: a. Directories b. Product Orders c. Order Status d. Science Data e. Management Data	V1-ICT-05
EOSD1710#A	ECS elements shall exchange with ADCs/ODCs, such as NOAA and other data processing and archiving facilities, information including the following: a. Directories b. Product Orders c. Order Status d. Science Data e. Management Data	V1-ICT-05
EOSD2430#A	Data base access and manipulation shall accommodate control of user access and update of security controlled data.	V1-EOC-05 V1-SDP-03 V1-SDP-07
EOSD2440#A	Data base integrity including prevention of data loss and corruption shall be maintained.	V1-SDP-07
EOSD2510#A	ECS elements shall maintain an audit trail of: a. All accesses to the element security controlled data b. Users/processes/elements requesting access to element security controlled data c. Data access/manipulation operations performed on security controlled data d. Date and time of access to security controlled data e. Unsuccessful access attempt to the element security controlled data by unauthorized users/elements/processes f. Detected computer system viruses and worms g. Actions taken to contain or destroy a virus	V1-EOC-05 V1-ICT-13 V1-SDP-03 V1-SDP-07
EOSD2510#B	ECS elements shall maintain an audit trail of: a. All accesses to the element security controlled data b. Users/processes/elements requesting access to element security controlled data c. Data access/manipulation operations performed on security controlled data d. Date and time of access to security controlled data e. Unsuccessful access attempt to the element security	V1-EOC-05 V1-ICT-13

	controlled data by unauthorized users/elements/processes f. Detected computer system viruses and worms g. Actions taken to contain or destroy a virus	
EOSD2550#A	The ECS elements shall limit use of master passwords or use of a single password for large organizations requiring access to a mix of security controlled and non-sensitive data.	V1-EOC-05 V1-SDP-03 V1-SDP-07
EOSD2550#B	The ECS elements shall limit use of master passwords or use of a single password for large organizations requiring access to a mix of security controlled and non-sensitive data.	V1-EOC-05
EOSD2990#A	The ECS elements shall support the recovery from a system failure due to a loss in the integrity of the ECS data or a catastrophic violation of the security system.	V1-EOC-05 V1-SDP-07
EOSD2990#B	The ECS elements shall support the recovery from a system failure due to a loss in the integrity of the ECS data or a catastrophic violation of the security system.	V1-EOC-05
EOSD3000#A	The ECS shall provide for security safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.	V1-EOC-05 V1-SDP-07
EOSD3000#B	The ECS shall provide for security safeguards to cover unscheduled system shutdown (aborts) and subsequent restarts, as well as for scheduled system shutdown and operational startup.	V1-EOC-05
EOSD3200#A	A minimum of one backup which is maintained in a separate physical location (i.e., different building) shall be maintained for ECS software and key data items (including security audit trails and logs).	V1-SDP-07
EOSD3220#A	All media shall be handled and stored in protected areas with environmental and accounting procedures applied.	V1-SDP-01
EOSD3710#A	The ECS shall have no single point of failure for functions associated with real-time operations of the spacecraft and instruments.	V1-EOC-05
EOSD3710#B	The ECS shall have no single point of failure for functions associated with real-time operations of the spacecraft and instruments.	V1-EOC-05

EOSD3820#B	The FOS shall have an operational availability of 0.992 at a minimum (.99997 design goal) and an MDT of one (1) hour or less (0.5 minute design goal) for functions associated with Targets Of Opportunity (TOOs).	V1-ICT-13
EOSD3910#A	The switchover time from the primary science data receipt capability to a backup capability shall be 15 minutes or less (10 minutes design goal).	V1-SDP-01
EOSD5000#B	ECS shall enable the addition of other data providers, e.g. DAACs, SCFs, ADCs, ODCs, which may: - provide heterogeneous services, i.e. services in support of EOS which may be less than or different than ECS services. - be connected with varying topologies - have variable levels of reliability or operational availability.	V1-ICT-05
EOSD5250#A	ECS shall enable access to configuration controlled applications programming interfaces that permit development of DAAC-unique value added services and products where DAAC-unique value added services may consist of one or more of the following types of developments: a. Visualization utilities and products b. Data sets and inter-data set usability utilities and products c. Data analysis utilities d. Special subsetting capabilities (e.g. dynamic) e. On-line analysis functions f. New search and access techniques g. Data acquisition planning and utilities h. Experimental QA techniques i. Non-digital data utilities and products j. System Management Functions	V1-SDP-06
ESN-0070#A	The ESN shall support the intrasite elements data flow requirements identified in this specification.	V1-SDP-01 V1-SDP-02
ESN-0280#A	The ESN shall provide file transfer and management service and as a minimum shall include the capability to transfer the following data types: a. Unstructured Text b. Binary Unstructured c. Binary Sequential d. Sequential Text	V1-SDP-03
ESN-0290#A	The file transfer and management service shall be available in interactive and non-interactive services.	V1-SDP-01 V1-SDP-03 V1-SDP-04
ESN-0300#A	The file transfer and management non-interactive services shall	V1-SDP-01



	be able to be scheduled.	V1-SDP-03 V1-SDP-04
ESN-0450#A	The ESN shall provide process-to-process communication service.	V1-SDP-03 V1-SDP-04
ESN-0490#A	The ESN shall provide a name-to-attribute mapping Directory Service at a minimum.	V1-SDP-01 V1-SDP-02 V1-SDP-03
ESN-0510#A	The directory function shall be able to respond to requests for information concerning named objects, either physical or logical, so as to support communications with those objects.	V1-SDP-01 V1-SDP-03
ESN-0590#A	The ESN Directory Service shall be protected by access control capabilities.	V1-SDP-03
ESN-0600#A	The ESN Directory service shall include services and supporting mechanisms to authenticate the credentials of a user for the purpose of granting access rights and authorizing requested operations.	V1-SDP-02 V1-SDP-03
ESN-0610#A	The ESN shall include multiple Directory Service Agents (DSAs) which shall be collectively responsible for holding or retrieving all directory information which is needed by ECS.	V1-SDP-02 V1-SDP-03 V1-SDP-04
ESN-0620#A	The ESN shall include a network management function to monitor and control the ESN.	V1-SDP-01
ESN-0640#A	The ESN shall include management functions at each ECS element, equipment or gateway within the ESN.	V1-SDP-01
ESN-0650#A	The ESN shall perform the following network management functions for each protocol stack implemented in any ECS element, and each communications facility: a. Network Configuration Management b. Network Fault Management c. Network Performance Management d. Network Security Management	V1-SDP-07
ESN-0830#A	The ESN shall have the capability to detect and report communications related errors and events both locally and at the SMC.	V1-SDP-01
ESN-0840#A	The ESN shall have error reporting, event logging and generation of alerts.	V1-SDP-01
ESN-0900#A	Errors and events to be detected shall include at least: a. communications software version or configuration errors b. communications hardware errors c. protocol errors d. performance degradation conditions e. telecommunications errors and failures	V1-SDP-01
ESN-0920#A	The ESN shall provide a set of utilities to perform diagnostic and testing functions for purposes of fault isolation.	V1-SDP-01

ESN-1140#A	The ESN shall provide protocol translation, termination, bridging and routing.	V1-SDP-01 V1-SDP-03 V1-SDP-04
ESN-1170#A	The ESN shall provide necessary translation within supported file transfer and e-mail services.	V1-SDP-01 V1-SDP-03 V1-SDP-04
ESN-1180#A	The ESN shall interoperate with NSI to provide user access to ECS.	V1-SDP-03
ESN-1206#A	The ESN capacity and performance shall be consistent with the specified capacity and performance requirements of the ECS functions.	V1-SDP-04
ESN-1207#A	The ESN capacity and performance shall be capable of expansion to be consistent with the specified capacity and performance growth requirements of the ECS elements and functions.	V1-SDP-04
ESN-1340#A	The ESN shall provide support for TCP/IP communications protocols and services to external interfaces as required by the IRDs.	V1-SDP-01 V1-SDP-03 V1-SDP-04
ESN-1350#A	The ESN LANs shall provide physical devices and the corresponding medium access control (MAC) protocol compatible with ISO and ANSI standards.	V1-SDP-01 V1-SDP-03 V1-SDP-04
ESN-1360#A	The ESN shall control access of processes and users through an authentication and authorization service that meets GNMP standards.	V1-SDP-03
ESN-1380#A	The ESN shall provide countermeasures for the following security threats related to data communications: a. modification of data (i.e., manipulation) while in transit over the network b. disclosure of authentication information c. degradation in network or processing resource performance through denial of service attack d. Impersonation of authentication credentials or authorization privileges.	V1-SDP-07
ESN-1400#A	The following security functions and services, at a minimum, shall be provided: a. authentication b. access (authorization) control c. data integrity d. data confidentiality	V1-SDP-03 V1-SDP-07
ESN-1430#A	The ESN shall provide the following security event functions: a. Event detection b. Event reporting c. Event logging	V1-SDP-03 V1-SDP-07
FOS-0020#A	The FOS shall provide a training mode of operation for use during operator training and/or user training that does not	V1-ICT-13

	interfere with ongoing operations.	
FOS-0020#B	The FOS shall provide a training mode of operation for use during operator training and/or user training that does not interfere with ongoing operations.	V1-ICT-13
FOS-0025#A	The FOS shall provide a test mode of operation that does not interfere with ongoing operations, and which supports independent element and subsystem tests, end-to-end tests, and integration and verification activities occurring during at a minimum: a. Spacecraft and instrument integration and test b. Pre-launch c. Upgrades and enhancements	V1-ICT-13
FOS-0025#B	The FOS shall provide a test mode of operation that does not interfere with ongoing operations, and which supports independent element and subsystem tests, end-to-end tests, and integration and verification activities occurring during at a minimum: a. Spacecraft and instrument integration and test b. Pre-launch c. Upgrades and enhancements	V1-ICT-13
FOS-0040#A	The FOS shall be capable of supporting flight operations of the EOS spacecraft and instruments as listed in Table D-1 that are controlled from GSFC.	V1-ICT-13
FOS-0040#B	The FOS shall be capable of supporting flight operations of the EOS spacecraft and instruments as listed in Table D-1 that are controlled from GSFC.	V1-ICT-13
ICC-0010#B	The GSFC ICC shall be responsible for planning, scheduling, commanding, and monitoring the instruments allocated to GSFC in Table D-1, Instrument Manifest.	V1-ICT-13
ICC-0020#B	The ICC shall be capable of interfacing with one or more local and/or remote ISTs for the instrument supported by the ICC.	V1-ICT-13
ICC-0030#A	The ICC shall have the capability to notify the TL or instrument PI at the IST of, at a minimum, the following: a. Conflicts found in planning and scheduling.	V1-ICT-13
ICC-0030#B	The ICC shall have the capability to notify the TL or instrument PI at the IST of, at a minimum, the following: a. Conflicts found in planning and scheduling b. Arrival of instrument engineering data c. Instrument anomalies found during instrument monitoring	V1-ICT-13
ICC-0055#A	The ICC shall interface with EDOS for coordinating EDOS-provided services (e.g., data delivery service messages, status).	V1-ICT-13
ICC-0055#B	The ICC shall interface with EDOS for coordinating EDOS-provided services (e.g.,	V1-ICT-13

	data delivery service messages, status).	
ICC-0070#B	The ICC shall be capable of accommodating instrument team-provided software and/or hardware to perform functions such as: a. Planning b. Scheduling c. Analysis d. Onboard microprocessor management	V1-ICT-13
ICC-1130#B	In support of a TOO observation, the ICC shall be able to evaluate the corresponding request within 30 minutes.	V1-ICT-13
ICC-2010#A	The ICC shall have the capability to access the EOC planning and scheduling information.	V1-ICT-13
ICC-2010#B	The ICC shall have the capability to access the EOC planning and scheduling information.	V1-ICT-13
ICC-2015#B	The ICC shall have the capability to access and execute EOC "what-if" functions for planning and scheduling analysis.	V1-ICT-13
ICC-2050#A	The ICC shall identify and resolve instrument planning and scheduling conflicts of its instrument based on, at a minimum, the following: a. Resource and time constraints b. In situ observation dependency c. Coordinated observation dependency among instruments d. Priorities set by the LTSP and LTIP	V1-ICT-13
ICC-2050#B	The ICC shall identify and resolve instrument planning and scheduling conflicts of its instrument based on, at a minimum, the following: a. Resource and time constraints b. In situ observation dependency c. Coordinated observation dependency among instruments d. Priorities set by the LTSP and LTIP	V1-ICT-13
ICC-2052#B	The ICC shall generate the instrument baseline activity profiles, based upon the LTIPs for the applicable instrument.	V1-ICT-13
ICC-2060#B	The ICC shall reintroduce applicable requested activities in its planning and scheduling function when the activity did not occur due to a deviation from the schedule.	V1-ICT-13
ICC-2110#B	The ICC shall be capable of converting PI/TL provided instrument deviation requests into scheduling directives suitable for inclusion in its instrument resource profile.	V1-ICT-13
ICC-2115#B	The ICC shall have the capability to plan and schedule instrument maintenance activities.	V1-ICT-13

ICC-2140#A	At least once each week, the ICC shall build an instrument resource profile or an instrument resource deviation list (when a baseline resource profile exists for the instrument), which includes a description of instrument operations currently planned for the target week.	V1-ICT-13
ICC-2140#B	At least once each week, the ICC shall build an instrument resource profile or an instrument resource deviation list (when a baseline resource profile exists for the instrument), which includes a description of instrument operations currently planned for the target week.	V1-ICT-13
ICC-2150#A	The ICC shall accept from the EOC a notification of rejection of its instrument activities proposed in the instrument resource profile or instrument resource deviation list.	V1-ICT-13
ICC-2150#B	The ICC shall accept from the EOC a notification of rejection of its instrument activities proposed in the instrument resource profile or instrument resource deviation list.	V1-ICT-13
ICC-2190#A	The ICC shall build or update its instrument resource profile, or when a resource profile exists, its instrument resource deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests b. LTSP and LTIP c. Current resource availability d. Current predicted orbit data and related information	V1-ICT-13
ICC-2190#B	The ICC shall build or update its instrument resource profile, or when a resource profile exists, its instrument resource deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests b. LTSP and LTIP c. Current resource availability d. Current predicted orbit data and related information e. Rejection notification from the EOC of activities that can not be accommodated in the preliminary resource schedule f. Existing preliminary resource schedule	V1-ICT-13
ICC-2210#A	The ICC shall ensure that its instrument resource profile contains no internal conflicts.	V1-ICT-13
ICC-2210#B	The ICC shall ensure that its instrument resource profile	V1-ICT-13

	contains no internal conflicts.	
ICC-2220#A	The ICC shall be able to generate the instrument resource profile in both machine usable and human readable forms.	V1-ICT-13
ICC-2220#B	The ICC shall be able to generate the instrument resource profile in both machine usable and human readable forms.	V1-ICT-13
ICC-2230#A	When generated, the ICC shall provide the EOC with its instrument resource profile or, when a resource profile exists, an instrument resource deviation list.	V1-ICT-13
ICC-2230#B	When generated, the ICC shall provide the EOC with its instrument resource profile or, when a resource profile exists, an instrument resource deviation list.	V1-ICT-13
ICC-2250#A	The ICC shall accept the preliminary resource schedule from the EOC.	V1-ICT-13
ICC-2250#B	The ICC shall accept the preliminary resource schedule from the EOC.	V1-ICT-13
ICC-2270#A	For each day the ICC shall be capable of generating or updating, an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) nominally covering the next 7 days.	V1-ICT-13
ICC-2270#B	For each day the ICC shall be capable of generating or updating, an instrument activity list or an instrument activity deviation list (when an activity profile exists for the instrument) nominally covering the next 7 days.	V1-ICT-13
ICC-2280#A	The ICC shall generate or update the instrument activity list, or when a baseline activity profile exists, the instrument activity deviation list, based, at a minimum, on the following: a. PI/TL provided instrument deviation requests. b. LTSP and LTIP c. Preliminary resource schedule d. Current resource availability information e. Current predicted orbit data and related information f. Responses to contingency/emergency conditions g. Rejection notification from the EOC of the activities that cannot be accommodated in the detailed activity schedule	V1-ICT-13

ICC-2280#B	<p>The ICC shall generate or update the instrument activity list, or when a baseline activity profile exists, the instrument activity deviation list, based, at a minimum, on the following:</p> <ul style="list-style-type: none"> <li>a. PI/TL provided instrument deviation requests.</li> <li>b. LTSP and LTIP</li> <li>c. Preliminary resource schedule</li> <li>d. Current resource availability information</li> <li>e. Current predicted orbit data and related information</li> <li>f. Responses to contingency/emergency conditions</li> <li>g. Rejection notification from the EOC of the activities that cannot be accommodated in the detailed activity schedule</li> </ul>	V1-ICT-13
ICC-2290#A	<p>The ICC shall generate the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) in both machine-usable and human-readable forms, to describe for each activity, at a minimum, as many of the following that apply:</p> <ul style="list-style-type: none"> <li>a. Activity identifier including traceability to PI/TL provided deviation requests.</li> <li>b. Objectives</li> <li>c. Resource requirements</li> <li>d. Start time constraints and duration</li> <li>e. Instrument modes as a function of time</li> <li>f. Pointing angles and field of view (FOV)</li> <li>g. Specified tolerance limits</li> <li>h. Disturbances caused for each instrument mode</li> </ul>	V1-ICT-13
ICC-2290#B	<p>The ICC shall generate the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) in both machine-usable and human-readable forms, to describe for each activity, at a minimum, as many of the following that apply:</p> <ul style="list-style-type: none"> <li>a. Activity identifier including traceability to PI/TL provided deviation requests.</li> <li>b. Objectives</li> <li>c. Resource requirements</li> <li>d. Start time constraints and duration</li> <li>e. Instrument modes as a function of time</li> <li>f. Pointing angles and field of view (FOV)</li> <li>g. Specified tolerance limits</li> </ul>	V1-ICT-13

	h. Disturbances caused for each instrument mode	
ICC-2300#A	The ICC shall accept from the EOC a notification of rejection of instrument activities.	V1-ICT-13
ICC-2300#B	The ICC shall accept from the EOC a notification of rejection of instrument activities.	V1-ICT-13
ICC-2350#B	In support of a TOO observation or a late change, the ICC shall update the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) within 8 hours, if the corresponding observation or the late change affects existing instrument activities or creates new conflicts.	V1-ICT-13
ICC-2370#B	In support of a TOO observation, the ICC shall update the instrument activity list or the instrument activity deviation list (when an activity profile exists for the instrument) within 30 minutes, if the corresponding observation or the late change does not affect existing instrument activities or create new conflicts.	V1-ICT-13
ICC-2380#B	In support of a late change, the ICC shall be capable of updating the instrument activity list within 75 minutes, if the request for instrument support activity does not affect existing instrument activity list events or create new conflicts.	V1-ICT-13
ICC-2390#A	The ICC shall provide the EOC with the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto, when generated.	V1-ICT-13
ICC-2390#B	The ICC shall provide the EOC with the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) and any updates thereto, when generated.	V1-ICT-13
ICC-2400#A	The ICC shall have the capability to update the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) in response to instrument malfunctions or other special events that affect the continuation of the existing schedule.	V1-ICT-13
ICC-2400#B	The ICC shall have the capability to update the instrument activity list or instrument activity deviation list (when an activity profile exists for the instrument) in response to instrument malfunctions or other special events that affect the continuation of the existing schedule.	V1-ICT-13
ICC-3010#A	The ICC shall validate SCC-stored instrument tables, as appropriate, that are generated at the ICC.	V1-ICT-13
ICC-3010#B	The ICC shall validate instrument loads, SCC-stored	V1-ICT-13



	instrument commands, and/or SCC-stored instrument tables, as appropriate, that are generated at the ICC.	
ICC-3020#B	The ICC shall accept the detailed activity schedule or its updates from the EOC.	V1-ICT-13
ICC-3040#A	The ICC shall be capable of generating, at least once each day, instrument loads, SCC-stored instrument commands based on the detailed activity schedule.	V1-ICT-13
ICC-3040#B	The ICC shall be capable of generating, at least once each day, instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables based on the detailed activity schedule.	V1-ICT-13
ICC-3050#B	The ICC shall be able to generate a command-to-memory location map for instrument-stored command loads.	V1-ICT-13
ICC-3060#B	The ICC shall generate and validate, in less than 1 hour, the instrument loads, SCC-stored instrument commands, and/or SCC-stored instrument tables for 24 hours of operation of its instrument.	V1-ICT-13
ICC-3070#B	In support of a TOO observation or late change, the ICC shall generate and validate the corresponding commands within 25 minutes of receiving an updated detailed activity schedule from the EOC, if the corresponding observation does not impact previously scheduled activities.	V1-ICT-13
ICC-3071#B	In support of a TOO observation, the ICC shall be capable of generating and validating the corresponding commands within 55 minutes of receiving an updated detailed activity schedule from the EOC, if the corresponding observation impacts previously scheduled activities.	V1-ICT-13
ICC-3085#B	In support of a late change, the ICC shall be capable of generating and validating the corresponding commands within 115 minutes of receiving an updated detailed activity schedule from the EOC, if the corresponding activity impacts previously scheduled activities.	V1-ICT-13
ICC-3090#A	The ICC shall generate, validate, and store, as command groups, preplanned instrument commands for later use in emergency situations to protect the health and safety of its instrument.	V1-ICT-13
ICC-3090#B	The ICC shall generate, validate, and store, as command groups, preplanned instrument commands for later use in emergency situations to protect the health and safety of its instrument.	V1-ICT-13
ICC-3100#A	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to support	V1-ICT-13

	specific TOO observations.	
ICC-3100#B	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to support specific TOO observations.	V1-ICT-13
ICC-3110#A	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to be used in event of instrument anomalies.	V1-ICT-13
ICC-3110#B	The ICC shall be able to generate, validate, and store preplanned contingency instrument commands to be used in event of instrument anomalies.	V1-ICT-13
ICC-3210#A	The ICC shall provide the EOC with instrument loads, SCC-stored instrument commands, SCC-stored instrument tables, preplanned real-time instrument commands, and associated information that includes, at a minimum, the following: a. Instrument identifier b. Schedule identifier, if applicable c. Critical command information	V1-ICT-13
ICC-3210#B	The ICC shall provide the EOC with instrument loads, SCC-stored instrument commands, SCC-stored instrument tables, preplanned real-time instrument commands, and associated information that includes, at a minimum, the following: a. Instrument identifier b. Schedule identifier, if applicable c. Critical command information	V1-ICT-13
ICC-3230#B	The ICC shall evaluate a command request from the IST against the current detailed activity schedule to determine whether it can be met with the corresponding commands without impacting previously scheduled activities.	V1-ICT-13
ICC-3270#A	The ICC shall be able to generate and validate emergency/contingency instrument command groups in emergency/contingency situations.	V1-ICT-13
ICC-3270#B	The ICC shall be able to generate and validate emergency/contingency instrument command groups in emergency/contingency situations.	V1-ICT-13
ICC-3370#B	The ICC shall provide the capability to verify the successful receipt and execution of instrument commands.	V1-ICT-13
ICC-4020#A	The ICC shall provide the capability to accept CCSDS packets from EDOS containing at a minimum the following data types: a. Spacecraft and instrument housekeeping data b. Instrument engineering data or instrument science data	V1-ICT-13

	within which instrument engineering data is embedded c. Instrument memory dump data	
ICC-4020#B	The ICC shall provide the capability to accept CCSDS packets from EDOS containing at a minimum the following data types: a. Spacecraft and instrument housekeeping data b. Instrument engineering data or instrument science data within which instrument engineering data is embedded c. Instrument memory dump data	V1-ICT-13
ICC-4045#A	The ICC shall provide the capability to extract instrument housekeeping data and relevant spacecraft parameters from the spacecraft and instrument housekeeping data stream.	V1-ICT-13
ICC-4045#B	The ICC shall provide the capability to extract instrument housekeeping data and relevant spacecraft parameters from the spacecraft and instrument housekeeping data stream.	V1-ICT-13
ICC-4050#B	The ICC shall be capable of extracting instrument engineering data from instrument science data.	V1-ICT-13
ICC-4060#B	The ICC shall support all EOS telemetry formats for instrument engineering data.	V1-ICT-13
ICC-4070#B	The ICC shall provide the capability to receive and report data quality information with the incoming CCSDS packets as provided by EDOS.	V1-ICT-13
ICC-4090#A	The ICC shall provide the capability to detect and report gaps in the telemetry data it receives.	V1-ICT-13
ICC-4090#B	The ICC shall provide the capability to detect and report gaps in the telemetry data it receives.	V1-ICT-13
ICC-4095#B	The ICC shall provide the capability to receive and process, non-telemetry data, which includes at a minimum the following: a. Monitor blocks from the DSN, GN, and WOTS b. Status messages from EDOS	V1-ICT-13
ICC-4100#A	The ICC shall have the capability to perform instrument housekeeping and engineering data processing, which include: a. Decommutation b. Engineering unit conversion c. Limit checking, flagging out-of-limit parameters	V1-ICT-13
ICC-4100#B	The ICC shall have the capability to perform instrument housekeeping and engineering data processing, which include: a. Decommutation b. Engineering unit conversion	V1-ICT-13

	c. Limit checking, flagging out-of-limit parameters	
ICC-4110#B	The ICC shall support the definition of sets of multiple sets of boundary limits for each non-discrete parameter, with each set including definitions for one or more upper and lower boundaries.	V1-ICT-13
ICC-4120#B	The ICC shall provide the capability to accept temporary or permanent changes to limit definitions.	V1-ICT-13
ICC-4130#B	The ICC shall have the capability to continuously process instrument housekeeping and engineering data in real time as it is being received.	V1-ICT-13
ICC-4150#A	The ICC shall have the capability to provide event messages whenever a predetermined number of limit violations for a parameter is detected.	V1-ICT-13
ICC-4150#B	The ICC shall have the capability to provide event messages whenever a predetermined number of limit violations for a parameter is detected.	V1-ICT-13
ICC-4170#B	The ICC shall provide the capability to determine the best estimate for instrument memory contents.	V1-ICT-13
ICC-4410#A	The ICC shall provide the capability to perform analysis on real-time data, spacecraft recorder data, and data from the ICC history log.	V1-ICT-13
ICC-4410#B	The ICC shall provide the capability to perform analysis on real-time data, spacecraft recorder data, and data from the ICC history log.	V1-ICT-13
ICC-4420#A	The ICC shall receive spacecraft status data from the EOC.	V1-ICT-13
ICC-4420#B	The ICC shall receive spacecraft status data from the EOC.	V1-ICT-13
ICC-4440#B	The ICC shall provide the capability to determine, for specified parameters over a specified time interval, at a minimum the following: a. Minimum value b. Maximum value c. Mean value d. Standard deviation of the parameter e. Time and duration of limit violations	V1-ICT-13
ICC-4450#A	The ICC shall provide the capability to plot specified parameters against other specified parameters or against time.	V1-ICT-13
ICC-4450#B	The ICC shall provide the capability to plot specified parameters against other specified parameters or against time.	V1-ICT-13
ICC-4460#A	The ICC shall provide the capability to time-correlate related instrument parameters.	V1-ICT-13

ICC-4460#B	The ICC shall provide the capability to time-correlate related instrument parameters.	V1-ICT-13
ICC-4470#A	The ICC shall provide the capability to define, check, and manage instrument-specific operations procedures.	V1-ICT-13
ICC-4470#B	The ICC shall provide the capability to define, check, and manage instrument-specific operations procedures.	V1-ICT-13
ICC-4480#B	The ICC shall have the capability to monitor and evaluate instrument environmental parameters.	V1-ICT-13
ICC-4490#A	The ICC shall provide the capability for trend analysis of instrument parameters.	V1-ICT-13
ICC-4490#B	The ICC shall provide the capability for trend analysis of instrument parameters.	V1-ICT-13
ICC-4500#B	The ICC shall provide the capability to generate instrument performance data based on the processing of instrument housekeeping data and instrument engineering data.	V1-ICT-13
ICC-4510#B	The ICC shall have the capability to generate instrument status data based on instrument performance data and instrument anomaly data.	V1-ICT-13
ICC-4540#B	The ICC shall monitor the configuration of the instrument.	V1-ICT-13
ICC-4545#B	The ICC shall have the capability to recommend instrument reconfigurations.	V1-ICT-13
ICC-4550#A	The ICC shall have the capability to compare and display selected instrument telemetry parameter values with the expected values based on, at a minimum the following: a. Scheduled instrument operational mode b. Trend analysis c. Instrument-specific telemetry information in the IDB	V1-ICT-13
ICC-4550#B	The ICC shall have the capability to compare and display selected instrument telemetry parameter values with the expected values based on, at a minimum the following: a. Scheduled instrument operational mode b. Trend analysis c. Instrument-specific telemetry information in the IDB	V1-ICT-13
ICC-4560#A	The ICC shall maintain a record of the instrument configuration, including the state of instrument subsystems.	V1-ICT-13
ICC-4560#B	The ICC shall maintain a record of the instrument configuration, including the state of instrument subsystems.	V1-ICT-13
ICC-4570#B	The ICC shall provide the capability to maintain a master ground image of the instrument memory.	V1-ICT-13
ICC-4580#B	The ICC shall provide the capability to compare the master ground image and the instrument memory dump.	V1-ICT-13
ICC-4590#B	The ICC shall provide the capability to detect, isolate, and resolve instrument failures and anomalies.	V1-ICT-13
ICC-4600#B	The ICC shall accept from the IST at a minimum the	V1-ICT-13

	following: a. Instrument anomaly notifications and instructions b. PI/TL analysis results c. Calibration information	
ICC-4730#B	The ICC shall have the capability to modify records in the IDB.	V1-ICT-13
ICC-4740#A	The ICC shall provide syntax and structure checking of the IDB.	V1-ICT-13
ICC-4740#B	The ICC shall provide syntax and structure checking of the IDB.	V1-ICT-13
ICC-4760#A	The ICC shall generate a report identifying any problems with the contents of the IDB.	V1-ICT-13
ICC-4760#B	The ICC shall generate a report identifying any problems with the contents of the IDB.	V1-ICT-13
ICC-4775#A	The ICC shall provide the EOC with the instrument-specific portion of the PDB and/or updates thereto.	V1-ICT-13
ICC-4775#B	The ICC shall provide the EOC with the instrument-specific portion of the PDB and/or updates thereto.	V1-ICT-13
ICC-4780#A	The ICC shall maintain a history log of instrument and ICC activities for at least 7 days, including at a minimum the following: a. All messages sent and received b. Engineering and housekeeping data c. Operator requests/directives and responses d. Commands e. Microprocessor loads and dumps f. Limits violations g. Error conditions h. Instrument status data i. Executed schedules j. Analysis results k. Instrument calibration parameters l. Spacecraft status information m. ICC reconfiguration information	V1-ICT-13
ICC-4780#B	The ICC shall maintain a history log of instrument and ICC activities for at least 7 days, including at a minimum the following: a. All messages sent and received b. Engineering and housekeeping data c. Operator requests/directives and responses d. Commands e. Microprocessor loads and dumps f. Limits violations	V1-ICT-13

	<ul style="list-style-type: none"> <li>g. Error conditions</li> <li>h. Instrument status data</li> <li>i. Executed schedules</li> <li>j. Analysis results</li> <li>k. Instrument calibration parameters</li> <li>l. Spacecraft status information</li> <li>m. ICC reconfiguration information</li> </ul>	
ICC-4790#A	The ICC shall be capable of extracting data sets from the history log by specifying time and data type.	V1-ICT-13
ICC-4790#B	The ICC shall be capable of extracting data sets from the history log by specifying time and data type.	V1-ICT-13
ICC-6005#A	The ICC shall have the capability to schedule its systems and communications interfaces that are used for its instrument operations and for other activities including maintenance, upgrade, sustaining engineering, testing, and training.	V1-ICT-13
ICC-6005#B	The ICC shall have the capability to schedule its systems and communications interfaces that are used for its instrument operations and for other activities including maintenance, upgrade, sustaining engineering, testing, and training.	V1-ICT-13
ICC-6010#B	The ICC shall participate in the scheduling of interface and end-to-end tests with the external elements involved including the EOC, the SMC for other EOS elements, and EDOS for MO&DSD data delivery systems.	V1-ICT-13
ICC-6020#A	The ICC shall establish its configuration, including functional connectivity within the ICC and between the ICC and external interfaces, for its instrument operations, tests, and maintenance.	V1-ICT-13
ICC-6020#B	The ICC shall establish its configuration, including functional connectivity within the ICC and between the ICC and external interfaces, for its instrument operations, tests, and maintenance.	V1-ICT-13
ICC-6030#B	The ICC shall perform prepass operational readiness tests on the ICC and between the ICC and external interfaces (via test messages).	V1-ICT-13
ICC-6040#A	The ICC shall support ongoing operations.	V1-ICT-13
ICC-6040#B	The ICC shall support reconfiguration to work around ICC faults and anomalies without interrupting other ongoing operations.	V1-ICT-13
ICC-6060#A	The ICC shall allow operator override for ICC reconfiguration requests that violate operational constraints.	V1-ICT-13
ICC-6060#B	The ICC shall allow operator override for ICC	V1-ICT-13

	reconfiguration requests that violate operational constraints.	
ICC-6070#A	The ICC shall manage initialization and shutdown of ICC functions.	V1-ICT-13
ICC-6070#B	The ICC shall manage initialization and shutdown of ICC functions.	V1-ICT-13
ICC-6090#B	The ICC shall alert the operator when its status changes or when data errors exceed operator-specified levels.	V1-ICT-13
ICC-6110#B	The ICC shall manage its faults, including at a minimum the following: a. Fault identification b. Identification of recommended solutions c. Log of fault activities through resolution	V1-ICT-13
ICC-6130#B	The ICC shall be capable of initiating diagnostics to aid in isolating internal faults, using safeguards to prevent their operations from affecting other operations.	V1-ICT-13
ICC-6135#B	The ICC shall participate in the resolution of failures and anomalies involving the interfaces of the ICC.	V1-ICT-13
ICC-6140#B	The ICC shall provide tests for validating, verifying, and checking functional capabilities and performance for ICC functions after the ICC has been repaired or upgraded.	V1-ICT-13
ICC-6150#B	The ICC shall provide the capability to support the instrument integration test activities associated with the instrument testing, spacecraft and instrument integration testing, and launch site testing.	V1-ICT-13
ICC-6510#A	The ICC shall provide the capability for the operator to control the ICC functions and components, utilizing a combination of input devices.	V1-ICT-13
ICC-6510#B	The ICC shall provide the capability for the operator to control the ICC functions and components, utilizing a combination of input devices.	V1-ICT-13
ICC-6520#A	The ICC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each ICC function.	V1-ICT-13
ICC-6520#B	The ICC shall provide the capability for the operator to send to displays, printers, and files spacecraft, instrument, and ground system information used or generated by each ICC function.	V1-ICT-13
ICC-6525#A	The ICC shall provide the capability to notify the operator of events and alarms.	V1-ICT-13
ICC-6525#B	The ICC shall provide the capability to notify the operator of events and alarms.	V1-ICT-13
ICC-6540#A	The ICC shall support the use of a high-level interactive	V1-ICT-13



	<p>control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. Evaluate algebraic and logical expressions</li> <li>b. Exercise decision logic (IF statements)</li> <li>c. Automated execution of a set of multiple directives (i.e., user interface language procedure)</li> <li>d. Internally branch to other parts of the user interface language procedure</li> <li>e. Nest user interface language procedures within procedures</li> <li>f. Initiate other ICC applications</li> </ul>	
ICC-6540#B	<p>The ICC shall support the use of a high-level interactive control language, which consists of a set of directives and programming-like language capabilities, including at a minimum the following:</p> <ul style="list-style-type: none"> <li>a. Evaluate algebraic and logical expressions</li> <li>b. Exercise decision logic (IF statements)</li> <li>c. Automated execution of a set of multiple directives (i.e., user interface language procedure)</li> <li>d. Internally branch to other parts of the user interface language procedure</li> <li>e. Nest user interface language procedures within procedures</li> <li>f. Initiate other ICC applications</li> </ul>	V1-ICT-13
ICC-6580#A	The ICC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V1-ICT-13
ICC-6580#B	The ICC shall provide the operator with the capability to create, modify, and delete user interface language procedures.	V1-ICT-13
ICC-6600#A	The ICC shall respond to user inputs within 0.5 seconds.	V1-ICT-13
ICC-6600#B	The ICC shall respond to user inputs within 0.5 seconds.	V1-ICT-13
ICC-7060	<p>The IST shall have the capability to accept data from the Science Computing Facility (SCF), which include at a minimum the following data:</p> <ul style="list-style-type: none"> <li>a. Microprocessor memory loads</li> <li>b. Changes in the instrument parameters</li> </ul>	V1-ICT-01
ICC-7060#A	<p>The IST shall have the capability to accept data from the Science Computing Facility (SCF), which include at a minimum the following data:</p> <ul style="list-style-type: none"> <li>a. Microprocessor memory loads</li> </ul>	V1-ICT-01 V1-ICT-13
ICC-7070	<p>The IST shall have the capability to provide data to the SCF, which include at a minimum the following data:</p> <ul style="list-style-type: none"> <li>a. Microprocessor memory dumps</li> <li>b. Instrument analysis results</li> </ul>	V1-ICT-01
ICC-7070#A	The IST shall have the capability to provide data to the SCF, which include at a minimum the following data:	V1-ICT-01 V1-ICT-13

	a. Instrument analysis results	
ICC-8010#B	The ICC shall be capable of supporting the following simultaneous activities: a. Performing mission coordination, planning, scheduling, monitoring, and commanding of its instruments. b. At least two of the following: mission test activities, ICC system upgrades, training, and/or maintenance.	V1-ICT-13
ICC-8020#B	The ICC computer hardware shall be able to grow without redesign to twice the processing, storage, and communications capacities estimated for full system operation.	V1-ICT-13
ICC-8050#B	When the ICC encounters a conflict while building or updating an instrument resource profile (or instrument resource deviation list), and the ICC does not have sufficient information to resolve the conflict, the ICC shall forward a request for its resolution to the PI/TL at the IST.	V1-ICT-13
IMS-0040#A	The IMS shall verify user authorization by validation of inputs with information as supplied by the SMC.	V1-SDP-03
IMS-0060#A	The IMS shall, when creating ECS user accounts, request registration approval, user account priorities, and authorized user services from the SMC.	V1-SDP-07
IMS-0130#A	The IMS shall verify that a user is authorized to access a particular IMS service before providing the service to the user.	V1-SDP-02 V1-SDP-03
IMS-0210#A	The IMS shall allow data access privileges to be configurable by user and data type for: a. Read b. Write c. Update d. Delete e. Any combination of the above	V1-SDP-02 V1-SDP-03
IMS-0230#A	The IMS shall restrict update of ECS directory, inventory, and guide (documentation/reference material) and other IMS data bases to authorized users based on the users access privileges.	V1-SDP-03
IMS-0240#A	The IMS shall provide, at a minimum, data base administration utilities for: a. Modifying the data base schema b. Performance monitoring c. Performance tuning d. Administration of user access control e. On-line incremental backup	V1-SDP-01

	<ul style="list-style-type: none"> <li>f. On-line recovery</li> <li>g. Export/import of data</li> </ul>	
IMS-0320#A	<p>Standard Product related metadata shall contain, at a minimum:</p> <ul style="list-style-type: none"> <li>a. Keywords and glossary from investigators</li> <li>b. Keywords, synonyms, and glossary for cross-product and cross-directory referencing</li> <li>c. Identifiers for locating products in the DADS archive by granule</li> <li>d. Documentation on algorithms, including version history, authors, written description of product, equations, and references</li> <li>e. Documentation on instrument(s) and spacecraft(s) including history of housekeeping and ancillary parameters, discipline characterization, calibration parameters, key individuals, and references</li> <li>f. Identifiers, algorithms, written descriptions, equations, authors, and references associated with static browse products and subsetted, subsampled, and summary data products</li> <li>g. Published papers, research results, significant results, and references by author and date</li> <li>h. Key organizations and personnel for all product-related DAACs, ADCs, and ODCs</li> <li>i. Granule-specific information as listed in Tables C-10 and C-11 in Appendix C</li> </ul>	V1-SDP-06
IMS-0320#B	<p>Standard Product related metadata shall contain, at a minimum:</p> <ul style="list-style-type: none"> <li>a. Keywords and glossary from investigators</li> <li>b. Keywords, synonyms, and glossary for cross-product and cross-directory referencing</li> <li>c. Identifiers for locating products in the DADS archive by granule</li> <li>d. Documentation on algorithms, including version history, authors, written description of product, equations, and references</li> <li>e. Documentation on instrument(s) and spacecraft(s) including history of housekeeping and ancillary parameters, discipline characterization, calibration parameters, key individuals, and references</li> <li>f. Identifiers, algorithms, written descriptions, equations, authors, and references associated with static browse products and subsetted, subsampled, and summary data products</li> <li>g. Published papers, research results, significant results, and</li> </ul>	V1-SDP-06

	<p>references by author and date</p> <p>h. Key organizations and personnel for all product-related DAACs, ADCs, and ODCs</p> <p>i. Granule-specific information as listed in Tables C-10 and C-11 in Appendix C</p>	
IMS-0350#A	The IMS shall provide the capability for authorized personnel to add, delete, or modify ECS metadata entries, individually or in groups.	V1-SDP-01 V1-SDP-02
IMS-0380	The IMS shall provide the capability to exchange directory data with IP data centers, ADCs, and selected ODCs.	V1-ICT-04
IMS-0380#A	The IMS shall provide the capability to exchange directory data with IP data centers, ADCs, and selected ODCs.	V1-ICT-04
IMS-0380#B	The IMS shall provide the capability to exchange directory data with IP data centers, ADCs, and selected ODCs.	V1-ICT-04
IMS-0390#A	The IMS shall maintain or provide access to directory entries for all data sets accessible through the IMS search and order service.	V1-ICT-04
IMS-0420#A	<p>The IMS on-line guide (documentation /reference material) shall provide or,</p> <p>where appropriate, contain references to such information as:</p> <p>a. Documentation of processing algorithms used for EOS and other Earth science data products generated by the ECS</p> <p>b. Results of science data quality assessments of EOS data</p> <p>c. Bibliography of published and unpublished literature (as available) derived from the project</p> <p>d. Cross references between differing studies of the same data</p> <p>e. Other documents relevant to quality assessment of EOS data</p> <p>f. Product specifications</p> <p>g. Instrument specifications</p> <p>h. Summaries of data sets derived from observation logs</p> <p>i. Format options available for the given data set</p> <p>j. Subsetting, subsampling, and transformation options available for the given data set</p> <p>k. Inventory search options available for the given data set</p>	V1-SDP-06
IMS-0420#B	<p>The IMS on-line guide (documentation /reference material) shall provide or,</p> <p>where appropriate, contain references to such information as:</p> <p>a. Documentation of processing algorithms used for EOS and other Earth science data products generated by the ECS</p> <p>b. Results of science data quality assessments of EOS data</p> <p>c. Bibliography of published and unpublished literature (as available) derived from the project</p> <p>d. Cross references between differing studies of the same data</p>	V1-SDP-06

	<ul style="list-style-type: none"> <li>e. Other documents relevant to quality assessment of EOS data</li> <li>f. Product specifications</li> <li>g. Instrument specifications</li> <li>h. Summaries of data sets derived from observation logs</li> <li>i. Format options available for the given data set</li> <li>j. Subsetting, subsampling, and transformation options available for the given data set</li> <li>k. Inventory search options available for the given data set</li> </ul>	
IMS-0510#A	<p>The IMS shall provide tools for research planning and data search, to include at a minimum:</p> <ul style="list-style-type: none"> <li>a. Data acquisition schedules and plans</li> <li>b. The capability to map specified geophysical parameters to the appropriate instrument and/or Standard Product</li> <li>c. Descriptive information on instruments and geophysical parameters available in Standard Products</li> <li>d. Climatology information</li> <li>f. Geographic reference aids</li> <li>g. Spacecraft location projections.</li> </ul>	V1-SDP-03
IMS-0600	The IMS shall provide the capability to search a directory of information that describes whole EOSDIS, non-EOSDIS, and ADC earth science data sets.	V1-ICT-04
IMS-0600#A	The IMS shall provide the capability to search a directory of information that describes whole EOSDIS, non-EOSDIS, and ADC earth science data sets.	V1-ICT-04
IMS-0600#B	The IMS shall provide the capability to search a directory of information that describes whole EOSDIS, non-EOSDIS, and ADC earth science data sets.	V1-ICT-04
IMS-0620	The IMS shall provide access to inventories of selected ODCs and ADCs via level II and level III catalog interoperability as specified in ICDs.	V1-ICT-04
IMS-0620#A	The IMS shall provide access to inventories of selected ODCs and ADCs via level II and level III catalog interoperability as specified in ICDs.	V1-ICT-04
IMS-0620#B	The IMS shall provide access to inventories of selected ODCs and ADCs via level II and level III catalog interoperability as specified in ICDs.	V1-ICT-04
IMS-0700#B	The IMS shall provide the capability for users to request subsetting, subsampled, and summary data products, which	V1-SDP-06

	have been processed at the PGS during the routine production processing and archived at the DADS, whenever associated inventory information is displayed.	
IMS-0705#B	The IMS shall provide the capability to request a subset (ie. scene) of a Landsat 7 subinterval indentified by: <ul style="list-style-type: none"> <li>a. WRS</li> <li>b. Geographic location (x,,z) spatial with rectangular boundries</li> <li>c. Spectral Band</li> <li>d. Time</li> </ul>	V1-SDP-06
IMS-0720#B	The IMS shall provide the capability to request data products which are processed ad hoc in response to user requests for subsetting, subsampling, or averaging within a granule based on defined criteria to include: <ul style="list-style-type: none"> <li>a. Geographical location (x, y, z - spatial with rectangular boundaries)</li> <li>b. Spectral band</li> <li>c. Time</li> <li>d. WRS</li> </ul>	V1-SDP-06
IMS-0730#B	The IMS shall, using information supplied by the DADS, provide the user an estimate of how long it will take before subsetted, subsampled, and summary data products are ready for visualization.	V1-SDP-06
IMS-0780	The IMS shall accept and validate from the ECS users, IPs, ADCs, and ODCs requests for ECS archival data products.	V1-ICT-04
IMS-0780#B	The IMS shall accept and validate from the ECS users, IPs, ADCs, and ODCs requests for ECS archival data products.	V1-ICT-04
IMS-0810#B	The IMS shall prepare, for output to the DADS, product orders to retrieve specified data from the archive and distribute it, which contains the following information at a minimum: <ul style="list-style-type: none"> <li>a. Requester identification</li> <li>b. Data type</li> <li>c. Data set identifier</li> <li>d. Data set subsetting instructions</li> <li>e. Data formats</li> <li>f. Distribution instructions, including media requirements</li> <li>g. Request priority</li> <li>h. Suggested earliest start time</li> <li>i. Suggested latest completion time</li> </ul>	V1-SDP-06
IMS-0860	The IMS shall provide an interface to ADC and ODC data systems and archives that produce, process, and/or maintain Earth science data sets and that have agreed to make the information and services available to ECS.	V1-ICT-04

IMS-0860#B	The IMS shall provide an interface to ADC and ODC data systems and archives that produce, process, and/or maintain Earth science data sets and that have agreed to make the information and services available to ECS.	V1-ICT-04
IMS-0870	The IMS shall provide access in accordance with MOUs to ADC and ODC data that <ul style="list-style-type: none"> <li>a. Has been generated by ADC and ODC data systems</li> <li>b. Is stored by ADC and ODC archives and requested by EOSDIS users</li> <li>c. Is required as ancillary data for production processing</li> </ul>	V1-ICT-04
IMS-0870#B	The IMS shall provide access in accordance with MOUs to ADC and ODC data that <ul style="list-style-type: none"> <li>a. Has been generated by ADC and ODC data systems</li> <li>b. Is stored by ADC and ODC archives and requested by EOSDIS users</li> <li>c. Is required as ancillary data for production processing</li> </ul>	V1-ICT-04
IMS-0880	The IMS shall provide an interface to the ADC and ODC archives for ordering data to be delivered directly to the user or to a DADS.	V1-ICT-04
IMS-0890	The IMS shall provide the capability to receive the metadata from the DADS when ADC or ODC data has been ingested into the ECS archives.	V1-ICT-04
IMS-0890#B	The IMS shall provide the capability to receive the metadata from the DADS when ADC or ODC data has been ingested into the ECS archives.	V1-ICT-04
IMS-0920#B	The IMS shall provide the capability for users to construct and submit standing orders and one-time requests for processing of ECS data by pre-existing processes, which shall contain the following information at a minimum: <ul style="list-style-type: none"> <li>a. Requester identification</li> <li>b. Algorithm input requirements</li> <li>c. Text description of need for processing</li> <li>d. Level 0-4 data set/subset</li> <li>e. Required time of generation</li> <li>f. Requested priority for product processing</li> <li>g. Resulting product type</li> <li>h. Processing parameters</li> </ul>	V1-SDP-06
IMS-1080#A	The IMS shall accept requests for acquisition of data to be processed one time or as standing orders.	V1-SDP-02 V1-SDP-03 V1-SDP-04
IMS-1290	The IMS shall send a product order to an ADC or an ODC with the identification of the destination DADS and suggested	V1-ICT-04

	shipping deadline for data required for product processing.	
IMS-1520#A	The IMS toolkit software shall provide data visualization tools to assist the investigators to perform the following functions, at a minimum: a. QA/Validation of products generated by the PGS b. Algorithm development c. Calibration functions, parameter verification, and anomaly detection d. View subsetted, subsampled, and summarized data whenever associated inventory information is displayed	V1-SDP-06
IMS-1520#B	The IMS toolkit software shall provide data visualization tools to assist the investigators to perform the following functions, at a minimum: a. QA/Validation of products generated by the PGS b. Algorithm development c. Calibration functions, parameter verification, and anomaly detection d. View subsetted, subsampled, and summarized data whenever associated inventory information is displayed	V1-SDP-06
IMS-1650#A	MS operations data shall contain information on: a. System utilization at the IMS b. Outstanding data distribution requests c. Outstanding processing requests d. Outstanding data acquisition requests	V1-SDP-02 V1-SDP-03 V1-SDP-04
IMS-1700#A	The IMS shall provide the capability to generate reports on: a. The backlog of data distribution requests b. The backlog of processing requests c. The backlog of data acquisition requests d. Data quality assessment e. Daily IMS operations summaries f. IMS performance summaries	V1-SDP-02 V1-SDP-03 V1-SDP-04
IMS-1790#A	The IMS shall provide, based upon the data model defined in Appendix C, sufficient storage for, at a minimum: a. Directory metadata b. Guide (documentation/reference material) metadata c. Inventory metadata d. System space, LSM data, and data base system overhead e. Metadata staging area f. Spacecraft housekeeping and ancillary data metadata g. Science processing library software metadata h. Summary data statistics i. User workspace	V1-SDP-01
LAND-0030#A	The LPS shall have the capability to send and the ECS shall have the	V1-EGS-05 V1-ICT-08



	capability to receive data availability notices for Landsat 7 Level 0R data, and associated inventory metadata and browse data.	
LAND-0050#A	The LPS shall have the capability to send and the ECS shall have the capability to receive inventory metadata for Landsat 7 Level 0R data.	V1-EGS-05 V1-ICT-08
LAND-0060#A	The LPS shall have the capability to send and the ECS shall have the capability to receive browse data for Landsat 7 Level 0R data.	V1-EGS-05 V1-ICT-08
LAND-0070#A	The LPS shall have the capability to send and the ECS shall have the capability to receive Landsat 7 Level 0R data.	V1-EGS-05 V1-ICT-08
LAND-0080#A	The ECS shall have the capability to send and the LPS shall have the capability to receive a data transfer acknowledgment.	V1-EGS-05 V1-ICT-08
LAND-0085#A	The ECS shall have the capability to send and the LPS shall have the capability to receive an acknowledgment after ECS archives the Landsat 7 data.	V1-EGS-05 V1-ICT-08
LAND-0150#A	All information exchanged between the Landsat 7 System and the ECS shall be provided in mutually agreed to formats.	V1-EGS-05 V1-ICT-08
LAND-0170#A	ECS elements shall be capable of supporting end-to-end test and verification activities of the EOS program including pre-launch, satellite verification, and instrument verification and operational phases as they pertain to the Landsat 7/ECS interface.	V1-EGS-05 V1-ICT-08
LAND-0185#A	The ECS shall be capable of supporting interface testing, operations testing and acceptance testing with the LPS, IAS and MOC.	V1-EGS-05 V1-ICT-08
LAND-0220#A	The Landsat 7 LPS shall provide the FDDI connector(s) and cable for connection to the ECS router and FDDI interface at EDC, required to transmit and receive Landsat 7 data to and from ECS.	V1-EGS-05 V1-ICT-08
NI-0010#B	ECS shall have the capability to communicate with the TDRSS via the EDOS/EBnet interface.	V1-ICT-02
NI-0020#B	ECS shall have the capability to communicate with the TDRSS for transmitting commands to EOS spacecraft (via the EDOS/EBnet interface). Mission-specific requirements for supporting EOS spacecraft command operations will be documented in the EOS mission-level Detailed Mission Requirements documents.	V1-ICT-02

NI-0030#B	ECS shall have the capability to interface with the TDRSS for obtaining return link (telemetry) data from EOS spacecraft (via the EDOS/EBnet interface). Mission-specific requirements for supporting EOS spacecraft telemetry operations will be documented in the EOS mission Detailed Mission Requirements documents.	V1-EOC-01 V1-EOC-04 V1-ICT-02
NI-0210#B	ECS shall have the capability to communicate with the GN, DSN, and WOTS via the EDOS/EBnet interface.	V1-EGS-02
NI-0220#B	ECS shall have the capability to communicate with the GN, DSN, and WOTS for transmitting commands to EOS spacecraft (via the EDOS/EBnet interface). Mission-specific requirements for supporting EOS spacecraft command operations will be documented in the EOS mission-level Detailed Mission Requirements documents.	V1-EGS-02
NI-0230#A	ECS shall have the capability to interface with the GN, DSN, and WOTS for obtaining return link (telemetry) data from EOS spacecraft (via the EDOS/Ecom interface). Mission-specific requirements for supporting EOS spacecraft telemetry operations will be documented in the EOS mission-level Detailed Mission Requirements documents.	V1-EGS-02
NI-0330#B	ECS shall have the capability to send a subset of EOS spacecraft telemetry stream to the FDF, which includes the following: a. Attitude sensor data b. Navigation telemetry data c. Spacecraft maneuver telemetry data Mission-specific requirements for FDF support of EOS missions will be documented in the EOS mission-level Detailed Mission Requirements documents and FDF-developed ICDs.	V1-SDP-06
NOAA0010	The interface between the ECS and the SAAs shall support two-way Level 2 or 3 catalog interoperability as defined by the CEOS.	V1-ICT-04
NOAA0010#B	The interface between ECS and the SAAs shall support one-	V1-ICT-04

	way level 2 or 3 catalog interoperability as defined by the CEOS such that an ECS user can access the SAA.	
NOAA0020	The ECS shall maintain a controlled list of the mutually-agreed data sets required from the NOAA ADC to support ECS standard product generation.	V1-ICT-04
NOAA0020#B	The ECS shall maintain a controlled list of the mutually-agreed data sets required from the NOAA ADC to support ECS standard product generation.	V1-ICT-04
NOAA0030	The interface providing catalog interoperability between the ECS and the SAA shall support the V0 protocol.	V1-ICT-04
NOAA0030#B	The interface providing catalog interoperability between the ECS and the SAA shall support the V0 protocol.	V1-ICT-04
NOAA0100	The SAAs shall have the capability to send and the ECS shall have the capability to receive advertising information.	V1-ICT-04
NOAA0100#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive advertising information.	V1-ICT-04
NOAA0110	The ECS shall have the capability to send and the SAAs shall have the capability to receive advertising information.	V1-ICT-04
NOAA0120	The SAAs shall have the capability to send and the ECS shall have the capability to receive User Authentication Requests.	V1-ICT-04
NOAA0120#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive User Authentication Requests.	V1-ICT-04
NOAA0130	The ECS shall have the capability to send and the SAAs shall have the capability to receive User Authentication Requests.	V1-ICT-04
NOAA0140	The SAAs shall have the capability to send and the ECS shall have the capability to receive User Authentication Results.	V1-ICT-04
NOAA0140#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive User Authentication Results.	V1-ICT-04
NOAA0150	The ECS shall have the capability to send and the SAAs shall have the capability to receive User Authentication Results.	V1-ICT-04
NOAA0200	The SAAs shall have the capability to send and the ECS shall have the capability to receive Guide Queries.	V1-ICT-04

NOAA0210	The ECS shall have the capability to send and the SAAs shall have the capability to receive Guide Queries.	V1-ICT-04
NOAA0210#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Guide Queries.	V1-ICT-04
NOAA0220	The SAAs shall have the capability to send and the ECS shall have the capability to receive Guide Query Results.	V1-ICT-04
NOAA0220#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Guide Query Results.	V1-ICT-04
NOAA0230	The ECS shall have the capability to send and the SAAs shall have the capability to receive Guide Query Results.	V1-ICT-04
NOAA0230#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Guide Query Results.	V1-ICT-04
NOAA0240	The SAAs shall have the capability to send and the ECS shall have the capability to receive Inventory Queries.	V1-ICT-04
NOAA0250	The ECS shall have the capability to send and the SAAs shall have the capability to receive Inventory Queries.	V1-ICT-04
NOAA0250#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Inventory Queries.	V1-ICT-04
NOAA0260	The SAAs shall have the capability to send and the ECS shall have the capability to receive Inventory Query Results.	V1-ICT-04
NOAA0260#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Inventory Query Results.	V1-ICT-04
NOAA0270	The ECS shall have the capability to send and the SAAs shall have the capability to receive Inventory Query Results.	V1-ICT-04
NOAA0280	The SAAs shall have the capability to send and the ECS shall have the capability to receive Browse Requests.	V1-ICT-04
NOAA0290	The ECS shall have the capability to send and the SAAs shall have the capability to receive Browse Requests.	V1-ICT-04
NOAA0290#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Browse Requests.	V1-ICT-04

NOAA0300	The SAAs shall have the capability to send and the ECS shall have the capability to receive Browse Results.	V1-ICT-04
NOAA0300#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Browse Results.	V1-ICT-04
NOAA0310	The ECS shall have the capability to send and the SAAs shall have the capability to receive Browse Results.	V1-ICT-04
NOAA0320	The SAAs shall have the capability to send and the ECS shall have the capability to receive Cost Estimate Requests.	V1-ICT-04
NOAA0330	The ECS shall have the capability to send and the SAAs shall have the capability to receive Cost Estimate Requests.	V1-ICT-04
NOAA0330#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Cost Estimate Requests.	V1-ICT-04
NOAA0340	The SAAs shall have the capability to send and the ECS shall have the capability to receive Cost Estimates.	V1-ICT-04
NOAA0340#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Cost Estimates.	V1-ICT-04
NOAA0350	The ECS shall have the capability to send and the SAAs shall have the capability to receive Cost Estimates.	V1-ICT-04
NOAA0400	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Requests.	V1-ICT-04
NOAA0410	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Requests.	V1-ICT-04
NOAA0410#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Requests.	V1-ICT-04
NOAA0420	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Delivery Status Requests.	V1-ICT-04
NOAA0430	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Delivery Status Requests.	V1-ICT-04
NOAA0430#B	The ECS shall have the capability to send and the SAAs shall have the	V1-ICT-04

	capability to receive Product Delivery Status Requests.	
NOAA0440	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Delivery Status.	V1-ICT-04
NOAA0440#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Product Delivery Status.	V1-ICT-04
NOAA0450	The ECS shall have the capability to send and the SAAs shall have the capability to receive Product Delivery Status.	V1-ICT-04
NOAA0460	The SAAs shall have the capability to send and the ECS shall have the capability to receive Spacecraft Schedules for SAA data sets requested by the ECS as ancillary data for ECS product generation.	V1-ICT-04
NOAA0460#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Spacecraft Schedules for SAA data sets requested by the ECS as ancillary data for ECS product generation.	V1-ICT-04
NOAA0510	The SAAs shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.	V1-ICT-04
NOAA0510#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.	V1-ICT-04
NOAA0520	The ECS shall have the capability to send, to SAA users, ECS-cataloged information, to include as a minimum data products, calibration data, documents, and algorithm packages.	V1-ICT-04
NOAA0530	The SAAs shall have the capability to send, to ECS users, SAA-cataloged information, to include as a minimum data products, calibration data, documents, and algorithm packages.	V1-ICT-04
NOAA0530#B	The SAAs shall have the capability to send, to ECS users, SAA-cataloged information, to include as a minimum data products, calibration data, documents, and algorithm packages.	V1-ICT-04

NOAA0560	The SAAs and the ECS shall have the capability to perform Schedule Adjudication via telephone.	V1-ICT-04
NOAA0560#B	The SAAs and the ECS shall have the capability to perform Schedule Adjudication via telephone.	V1-ICT-04
NOAA0570	The SAAs shall have the capability to send and the ECS shall have the capability to receive Algorithm Packages contributed by the SAAs as EOSDIS resources.	V1-ICT-04
NOAA0570#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Algorithm Packages contributed by the SAAs as EOSDIS resources.	V1-ICT-04
NOAA0580	The ECS shall have the capability to send and the SAAs shall have the capability to receive Algorithm Packages archived by the ECS as EOSDIS resources.	V1-ICT-04
NOAA0600	The SAAs shall have the capability to send and the ECS shall have the capability to receive Network Management information.	V1-ICT-04
NOAA0600#B	The SAAs shall have the capability to send and the ECS shall have the capability to receive Network Management information.	V1-ICT-04
NOAA0610	The ECS shall have the capability to send and the SAAs shall have the capability to receive Network Management information.	V1-ICT-04
NOAA0610#B	The ECS shall have the capability to send and the SAAs shall have the capability to receive Network Management information.	V1-ICT-04
NOAA0700	The ECS shall have the capability to send and the NMC shall have the capability to receive requests for ancillary data to support ECS standard product generation.	V1-ICT-04
NOAA0700	The ECS shall have the capability to send and the NMC shall have the capability to receive requests for ancillary data to support ECS standard product generation.	V1-ICT-05
NOAA0700#A	The ECS shall have the capability to send and the NMC shall have the	V1-ICT-05

	capability to receive requests for ancillary data to support ECS standard product generation.	
NOAA0700#B	The ECS shall have the capability to send and the NMC shall have the capability to receive requests for ancillary data to support ECS standard product generation.	V1-ICT-04 V1-ICT-05
NOAA0710	The NMC shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.	V1-ICT-04 V1-ICT-05
NOAA0710#A	The NMC shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.	V1-ICT-05
NOAA0710#B	The NMC shall have the capability to send and the ECS shall have the capability to receive data sets to be used as ancillary data for ECS standard product generation.	V1-ICT-04 V1-ICT-05
NOAA0720	The ECS shall have the capability to send and the NMC shall have the capability to receive Product Availability Queries.	V1-ICT-04 V1-ICT-05
NOAA0720#A	The ECS shall have the capability to send and the NMC shall have the capability to receive Product Availability Queries.	V1-ICT-05
NOAA0720#B	The ECS shall have the capability to send and the NMC shall have the capability to receive Product Availability Queries.	V1-ICT-04 V1-ICT-05
NOAA0730	The NMC shall have the capability to send and the ECS shall have the capability to receive Product Availability Lists.	V1-ICT-04 V1-ICT-05
NOAA0730#A	The NMC shall have the capability to send and the ECS shall have the capability to receive Product Availability Lists.	V1-ICT-05
NOAA0730#B	The NMC shall have the capability to send and the ECS shall have the capability to receive Product Availability Lists.	V1-ICT-04 V1-ICT-05
NOAA0800	The NOAA Data Centers shall have the capability to send and the ECS shall have the capability to receive advertising information.	V1-ICT-04



NOAA0800#B	The NOAA Data Centers shall have the capability to send and the ECS shall have the capability to receive advertising information.	V1-ICT-04
SCF-0001	The SCF interface platform shall adhere to requirements specified in the Data Production Software and SCF Standards and Guidelines, GSFC 423-16-01. This standards document includes SCF requirements for operating system, computer communications, e-mail protocol, and windowing protocol.	V1-ICT-01
SCF-0001#A	The SCF interface platform shall adhere to requirements specified in the Data Production Software and SCF Standards and Guidelines, GSFC 423-16-01. This standards document includes SCF requirements for operating system, computer communications, e-mail protocol, and windowing protocol.	V1-ICT-01
SCF-0001#B	The SCF interface platform shall adhere to requirements specified in the Data Production Software and SCF Standards and Guidelines, GSFC 423-16-01. This standards document includes SCF requirements for operating system, computer communications, e-mail protocol, and windowing protocol.	V1-ICT-01
SCF-0010	The SCF interface shall consist of an ESDIS approved computing platform that shall have a C compiler. To access FORTRAN routines in the ECS Toolkits, the platform shall also have a FORTRAN compiler.	V1-ICT-01
SCF-0010#A	The SCF interface shall consist of an ESDIS approved computing platform that shall have a C compiler. To access FORTRAN routines in the ECS Toolkits, the platform shall also have a FORTRAN compiler.	V1-ICT-01
SCF-0010#B	The SCF interface shall consist of an ESDIS approved computing platform that shall have a C compiler. To access FORTRAN routines in the ECS Toolkits, the platform shall also have a FORTRAN compiler.	V1-ICT-01
SCF-0020	The SCF interface platform shall have an I/O communication port and the ability to run TCP/IP software for communication to the ECS.	V1-ICT-01

SCF-0020#A	The SCF interface platform shall supply the DCE client and have an I/O communication port and the ability to run TCP/IP software for communication to the ECS.	V1-ICT-01
SCF-0020#B	The SCF interface platform shall supply the DCE client and have an I/O communication port and the ability to run TCP/IP software for communication to the ECS.	V1-ICT-01
SCF-0025	The SCF interface platform shall provide one of the following levels of security for interoperation with ECS: a. Kerberized authentication for bi-directional file transfers. b. User of Distributed Computing Environment (DCE) for authentication of users, authorization of users for access to services such as remote file access, and provision for integrity of data being transferred.	V1-ICT-01
SCF-0025#A	The SCF interface platform shall provide one of the following levels of security for interoperation with ECS: a. Kerberized authentication for bi-directional file transfers. b. User of Distributed Computing Environment (DCE) for authentication of users, authorization of users for access to services such as remote file access, and provision for integrity of data being transferred.	V1-ICT-01
SCF-0025#B	The SCF interface platform shall provide one of the following levels of security for interoperation with ECS: a. Kerberized authentication for bi-directional file transfers. b. User of Distributed Computing Environment (DCE) for authentication of users, authorization of users for access to services such as remote file access, and provision for integrity of data being transferred.	V1-ICT-01
SCF-0030	The SCF interface platform shall have adequate computing resources for the storage, compilation, linking, and execution of ECS supplied software resident on the platform.	V1-ICT-01
SCF-0030#A	The SCF interface platform shall have adequate computing resources for the storage, compilation, linking, and execution of ECS supplied software resident on the platform.	V1-ICT-01
SCF-0030#B	The SCF interface platform shall have adequate computing resources for the storage, compilation, linking, and execution of ECS supplied software resident on the platform.	V1-ICT-01

SCF-0040#A	The ECS shall have the capability to send to the SCFs the Data Production Software Specification Requirements describing what is required for completing the Initial Data Production Software Specifications.	V1-ICT-01
SCF-0060	The ECS shall have the capability to provide to the SCF the Toolkit Delivery and Update Package. This package includes the PGS toolkit which supplies tools for the emulation of the ECS production environment and contains a ECS-standardized software routines to aid in science data production software development.	V1-ICT-01
SCF-0060#A	The ECS shall have the capability to provide to the SCF the Toolkit Delivery and Update Package. This package includes the PGS toolkit which supplies tools for the emulation of the ECS production environment and contains a ECS-standardized software routines to aid in science data production software development.	V1-ICT-01
SCF-0060#B	The ECS shall have the capability to provide to the SCF the Toolkit Delivery and Update Package. This package includes the PGS toolkit which supplies tools for the emulation of the ECS production environment and contains a ECS-standardized software routines to aid in science data production software development.	V1-ICT-01
SCF-0070	The ECS shall have the capability to provide Integration and Test Specifications to the scientist at the SCF. These specifications are defined by the Data Processing Focus Team. These specifications are implemented in the Data Production Software Delivery Package and support smooth integration of the data production software into the ECS production environment.	V1-ICT-01
SCF-0070#A	The ECS shall have the capability to provide Integration and	V1-ICT-01

	Test Specifications to the scientist at the SCF. These specifications are defined by the Data Processing Focus Team. These specifications are implemented in the Data Production Software Delivery Package and support smooth integration of the data production software into the ECS production environment.	
SCF-0070#B	The ECS shall have the capability to provide Integration and Test Specifications to the scientist at the SCF. These specifications are defined by the Data Processing Focus Team. These specifications are implemented in the Data Production Software Delivery Package and support smooth integration of the data production software into the ECS production environment.	V1-ICT-01
SCF-0080	The ECS shall have the capability to provide an Interactive Session Dialog with the SCF. This dialog, to aid integration and test of the data production software into the ECS production environment, shall support, at a minimum, general communications between the ECS and the SCF that include logins, mail messages, status reports, test coordination, test execution scripts, and solutions to minor problems.	V1-ICT-01
SCF-0080#A	The ECS shall have the capability to provide an Interactive Session Dialog with the SCF. This dialog, to aid integration and test of the data production software into the ECS production environment, shall support, at a minimum, general communications between the ECS and the SCF that include logins, mail messages, status reports, test coordination, test execution scripts, and solutions to minor problems.	V1-ICT-01
SCF-0080#B	The ECS shall have the capability to provide an Interactive Session Dialog	V1-ICT-01

	with the SCF. This dialog, to aid integration and test of the data production software into the ECS production environment, shall support, at a minimum, general communications between the ECS and the SCF that include logins, mail messages, status reports, test coordination, test execution scripts, and solutions to minor problems.	
SCF-0090	The SCF shall have the capability to provide ECS with the Data Production Software Delivery Package with "Required Items For Delivery" as specified by the Science User's Guide and Operations Procedure Handbook for the ECS Project.	V1-ICT-01
SCF-0090#A	The SCF shall have the capability to provide ECS with the Data Production Software Delivery Package with "Required Items For Delivery" as specified by the Science User's Guide and Operations Procedure Handbook for the ECS Project.	V1-ICT-01
SCF-0090#B	The SCF shall have the capability to provide ECS with the Data Production Software Delivery Package with "Required Items For Delivery" as specified by the Science User's Guide and Operations Procedure Handbook for the ECS Project.	V1-ICT-01
SCF-0100	The ECS shall have the capability to forward Test Products to the SCF. These products generated by the science software at the ECS will require the review of the scientist at the SCF who submitted the software.	V1-ICT-01
SCF-0100#A	The ECS shall have the capability to forward Test Products to the SCF. These products generated by the science software at the ECS will require the review of the scientist at the SCF who submitted the software.	V1-ICT-01
SCF-0100#B	The ECS shall have the capability to forward Test Products to the SCF. These products generated by the science software at the ECS	V1-ICT-01

	will require the review of the scientist at the SCF who submitted the software.	
SCF-0110	The ECS shall have the capability to receive Test Product Reviews from the SCF. These reviews shall include the comments and recommendations of the scientist at the SCF who has reviewed the Test Products.	V1-ICT-01
SCF-0110#A	The ECS shall have the capability to receive Test Product Reviews from the SCF. These reviews shall include the comments and recommendations of the scientist at the SCF who has reviewed the Test Products.	V1-ICT-01
SCF-0110#B	The ECS shall have the capability to receive Test Product Reviews from the SCF. These reviews shall include the comments and recommendations of the scientist at the SCF who has reviewed the Test Products.	V1-ICT-01
SCF-0120	The ECS shall have the capability to receive Data Production Software Updates from the SCF. These Data Production Software Updates include modifications to any data production software already submitted to the ECS by the SCF. The Data Production Software Updates may include some or all the items required in the Data Production Software Delivery Package.	V1-ICT-01
SCF-0120#A	The ECS shall have the capability to receive Data Production Software Updates from the SCF. These Data Production Software Updates include modifications to any data production software already submitted to the ECS by the SCF. The Data Production Software Updates may include some or all the items required in the Data Production Software Delivery Package.	V1-ICT-01
SCF-0120#B	The ECS shall have the capability to receive Data Production Software	V1-ICT-01

	Updates from the SCF. These Data Production Software Updates include modifications to any data production software already submitted to the ECS by the SCF. The Data Production Software Updates may include some or all the items required in the Data Production Software Delivery Package.	
SCF-0130	The ECS shall have the capability to receive Special Products from the SCF. These shall include L1 - L4 Special Products.	V1-ICT-01
SCF-0130#B	The ECS shall have the capability to receive Special Products from the SCF. These shall include L1 - L4 Special Products.	V1-ICT-01
SCF-0140	The ECS shall have the capability to receive Metadata, related to Special Products, from the SCF.	V1-ICT-01
SCF-0140#B	The ECS shall have the capability to receive Metadata, related to Special Products, from the SCF.	V1-ICT-01
SCF-0150	The ECS shall have the capability to receive Ancillary Data, related to Special Products, from the SCF.	V1-ICT-01
SCF-0150#B	The ECS shall have the capability to receive Ancillary Data, related to Special Products, from the SCF.	V1-ICT-01
SCF-0160	The ECS shall have the capability to receive Calibration Data, related to Special Products, from the SCF.	V1-ICT-01
SCF-0160#B	The ECS shall have the capability to receive Calibration Data, related to Special Products, from the SCF.	V1-ICT-01
SCF-0170	The ECS shall have the capability to receive Correlative Data, related to Special Products, from the SCF.	V1-ICT-01
SCF-0170#B*	The ECS shall have the capability to receive Correlative Data, related to Special Products, from the SCF.	V1-ICT-01
SCF-0180	The ECS shall have the capability to receive Documents from the SCF that are related to Special Products and deemed necessary by the contributing scientist.	V1-ICT-01

SCF-0180#B	The ECS shall have the capability to receive Documents from the SCF that are related to Special Products and deemed necessary by the contributing scientist.	V1-ICT-01
SCF-0190	The ECS shall have the capability to receive Data Production Software, related to Special Products, from the SCF.	V1-ICT-01
SCF-0190#B	The ECS shall have the capability to receive Data Production Software, related to Special Products, from the SCF.	V1-ICT-01
SCF-0200	The ECS shall have the capability to receive from the SCF a QA Notification Specification. This specification, submitted by the scientist at the SCF, describes the conditions under which data should be forwarded to the SCF for QA.	V1-ICT-01
SCF-0200#A	The ECS shall have the capability to receive from the SCF a QA Notification Specification. This specification, submitted by the scientist at the SCF, describes the conditions under which data should be forwarded to the SCF for QA.	V1-ICT-01
SCF-0200#B	The ECS shall have the capability to receive from the SCF a QA Notification Specification. This specification, submitted by the scientist at the SCF, describes the conditions under which data should be forwarded to the SCF for QA.	V1-ICT-01
SCF-0210	The ECS shall have the capability to send a Data Quality Request Notification to the SCF. This notification is sent when QA notification criteria are met during routine ECS processing. The notification states the data product and the time by which a notification, and optionally data, must be evaluated and returned to the ECS for inclusion as an update to the product metadata.	V1-ICT-01
SCF-0210#A	The ECS shall have the capability to send a Data Quality Request Notification to the SCF. This notification is sent when	V1-ICT-01



	QA notification criteria are met during routine ECS processing. The notification states the data product and the time by which a notification, and optionally data, must be evaluated and returned to the ECS for inclusion as an update to the product metadata.	
SCF-0210#B	The ECS shall have the capability to send a Data Quality Request Notification to the SCF. This notification is sent when QA notification criteria are met during routine ECS processing. The notification states the data product and the time by which a notification, and optionally data, must be evaluated and returned to the ECS for inclusion as an update to the product metadata.	V1-ICT-01
SCF-0220	The ECS shall have the capability to receive from the SCF a Request for Data to QA. This request may be a standing request specified in the QA Notification Specification and may include the data product specified in the Data Quality Request Notification, or other data required by the scientist to QA the data product.	V1-ICT-01
SCF-0220#A	The ECS shall have the capability to receive from the SCF a Request for Data to QA. This request may be a standing request specified in the QA Notification Specification and may include the data product specified in the Data Quality Request Notification, or other data required by the scientist to QA the data product.	V1-ICT-01
SCF-0220#B	The ECS shall have the capability to receive from the SCF a Request for Data to QA. This request may be a standing request specified in the QA Notification Specification and may include the data product specified in the Data Quality Request Notification, or other data required by the scientist to QA the data product.	V1-ICT-01
SCF-0230	The ECS shall have the capability to send Data Delivered for QA to the SCF. This data includes the data requested by the scientist needed for the QA of data products.	V1-ICT-01
SCF-0230#A	The ECS shall have the capability to send Data Delivered for	V1-ICT-01

	QA to the SCF. This data includes the data requested by the scientist needed for the QA of data products.	
SCF-0230#B	The ECS shall have the capability to send Data Delivered for QA to the SCF. This data includes the data requested by the scientist needed for the QA of data products.	V1-ICT-01
SCF-0240	The ECS shall have the capability to receive an On Time QA from the SCF. This shall consist of the science QA codes describing the results of product QA and any further instructions to the ECS. The ECS shall accept the On Time QA when it is received within the time-out period specified in the Data Quality Request Notification. ECS shall accept post-time-out QA updates as Metadata Updates as specified by Requirement SCF-0250.	V1-ICT-01
SCF-0240#A	The ECS shall have the capability to receive an On Time QA from the SCF. This shall consist of the science QA codes describing the results of product QA and any further instructions to the ECS. The ECS shall accept the On Time QA when it is received within the time-out period specified in the Data Quality Request Notification. ECS shall accept post-time-out QA updates as Metadata Updates as specified by Requirement SCF-0250.	V1-ICT-01
SCF-0240#B	The ECS shall have the capability to receive an On Time QA from the SCF. This shall consist of the science QA codes describing the results of product QA and any further instructions to the ECS. The ECS shall accept the On Time QA when it is received within the time-out period specified in the Data Quality Request Notification. ECS shall accept post-time-out QA updates as Metadata Updates as specified by Requirement SCF-0250.	V1-ICT-01

SCF-0250	The ECS shall have the capability to receive Metadata Updates from the SCF. These shall include the science QA codes and optionally a report describing the results of product QA and any further instructions to the ECS. The ECS shall only accept Metadata Updates when they are received after the time allotment specified in the Data Quality Request Notification.	V1-ICT-01
SCF-0250#A	The ECS shall have the capability to receive Metadata Updates from the SCF. These shall include the science QA codes and optionally a report describing the results of product QA and any further instructions to the ECS. The ECS shall only accept Metadata Updates when they are received after the time allotment specified in the Data Quality Request Notification.	V1-ICT-01
SCF-0250#B	The ECS shall have the capability to receive Metadata Updates from the SCF. These shall include the science QA codes and optionally a report describing the results of product QA and any further instructions to the ECS. The ECS shall only accept Metadata Updates when they are received after the time allotment specified in the Data Quality Request Notification.	V1-ICT-01
SCF-0260	The ECS shall have the capability to make a Reprocessing Request Template available to the SCF. This template will be used by the scientist at the SCF to prepare a Reprocessing Request.	V1-ICT-01
SCF-0260#A	The ECS shall have the capability to make a Reprocessing Request Template available to the SCF. This template will be used by the scientist at the SCF to prepare a Reprocessing Request.	V1-ICT-01
SCF-0260#B	The ECS shall have the capability to make a Reprocessing Request	V1-ICT-01

	Template available to the SCF. This template will be used by the scientist at the SCF to prepare a Reprocessing Request.	
SCF-0270	The ECS shall have the capability to receive a Reprocessing Request from the SCF. This request, at a minimum, contains the following, a list of all the products to be generated, the version numbers of the science software and calibration coefficients, a list of all ancillary data, and data start and stop times.	V1-ICT-01
SCF-0270#A	The ECS shall have the capability to receive a Reprocessing Request from the SCF. This request, at a minimum, contains the following, a list of all the products to be generated, the version numbers of the science software and calibration coefficients, a list of all ancillary data, and data start and stop times.	V1-ICT-01
SCF-0270#B	The ECS shall have the capability to receive a Reprocessing Request from the SCF. This request, at a minimum, contains the following, a list of all the products to be generated, the version numbers of the science software and calibration coefficients, a list of all ancillary data, and data start and stop times.	V1-ICT-01
SCF-0280	The ECS shall have the capability to supply a Reprocessing Status to the SCF. This status that includes the reprocessing schedule informs the scientist at the SCF the status of his reprocessing request and provides notification upon completion of the reprocessing by the ECS.	V1-ICT-01
SCF-0280#A	The ECS shall have the capability to supply a Reprocessing Status to the SCF. This status that includes the reprocessing schedule informs the scientist at the SCF the status of his reprocessing request and provides notification upon completion of the reprocessing by the ECS.	V1-ICT-01
SCF-0280#B	The ECS shall have the capability to supply a Reprocessing	V1-ICT-01

	Status to the SCF. This status that includes the reprocessing schedule informs the scientist at the SCF the status of his reprocessing request and provides notification upon completion of the reprocessing by the ECS.	
SCF-0290	The ECS shall have the capability to send the Local Data Access Services Delivery Package to the SCF. This package shall provide management of, search of, and access to local metadata.	V1-ICT-01
SCF-0290#B	The ECS shall have the capability to send the Local Data Access Services Delivery Package to the SCF. This package shall provide management of, search of, and access to local metadata.	V1-ICT-01
SCF-0300	The SCF shall have the capability to install and make operational in the SCF environment all COTS products that are required by Local Data Access Services.	V1-ICT-01
SCF-0300#A	The SCF shall have the capability to install and make operational in the SCF environment all COTS products that are required by Local Data Access Services.	V1-ICT-01
SCF-0300#B	The SCF shall have the capability to install and make operational in the SCF environment all COTS products that are required by Local Data Access Services.	V1-ICT-01
SCF-0310	The ECS shall have the capability to receive Calibration Coefficient Requests from the SCF. The current or past calibration coefficients used in processing of instrument data may be requested by the scientist from the ECS.	V1-ICT-01
SCF-0310#A	The ECS shall have the capability to receive Calibration Coefficient Requests from the SCF. The current or past calibration coefficients used in processing of instrument data may be requested by the scientist from the ECS.	V1-ICT-01

SCF-0310#B	The ECS shall have the capability to receive Calibration Coefficient Requests from the SCF. The current or past calibration coefficients used in processing of instrument data may be requested by the scientist from the ECS.	V1-ICT-01
SCF-0320	The ECS shall be capable of sending to the SCF Calibration Coefficients. These shall include the calibration coefficients requested by the scientist at the SCF in the Calibration Coefficient Request.	V1-ICT-01
SCF-0320#A	The ECS shall be capable of sending to the SCF Calibration Coefficients. These shall include the calibration coefficients requested by the scientist at the SCF in the Calibration Coefficient Request.	V1-ICT-01
SCF-0320#B	The ECS shall be capable of sending to the SCF Calibration Coefficients. These shall include the calibration coefficients requested by the scientist at the SCF in the Calibration Coefficient Request.	V1-ICT-01
SCF-0330	The ECS shall have the capability to receive a Calibration Coefficient Update Package from the SCF. This package shall include a calibration coefficient file and other documentation needed to implement the updated coefficients.	V1-ICT-01
SCF-0330#A	The ECS shall have the capability to receive a Calibration Coefficient Update Package from the SCF. This package shall include a calibration coefficient file and other documentation needed to implement the updated coefficients.	V1-ICT-01
SCF-0330#B	The ECS shall have the capability to receive a Calibration Coefficient Update Package from the SCF. This package shall include a calibration coefficient file and other documentation needed to implement the updated coefficients.	V1-ICT-01
SCF-0340	The SCF shall have the capability to send a Request for Processing Status	V1-ICT-01

	to the ECS for the status of SCF-requested data processing.	
SCF-0340#A	The SCF shall have the capability to send a Request for Processing Status to the ECS for the status of SCF-requested data processing.	V1-ICT-01
SCF-0340#B	The SCF shall have the capability to send a Request for Processing Status to the ECS for the status of SCF-requested data processing.	V1-ICT-01
SCF-0350	The ECS shall have the capability to provide SCF with the Processing Status of SCF-requested data processing.	V1-ICT-01
SCF-0350#A	The ECS shall have the capability to provide SCF with the Processing Status of SCF-requested data processing.	V1-ICT-01
SCF-0350#B	The ECS shall have the capability to provide SCF with the Processing Status of SCF-requested data processing.	V1-ICT-01
SCF-0360	The SCF shall have the capability to send a Request for Resource Usage to the ECS for information about ECS resource usage during SCF-requested data processing.	V1-ICT-01
SCF-0360#A	The SCF shall have the capability to send a Request for Resource Usage to the ECS for information about ECS resource usage during SCF-requested data processing.	V1-ICT-01
SCF-0360#B	The SCF shall have the capability to send a Request for Resource Usage to the ECS for information about ECS resource usage during SCF-requested data processing.	V1-ICT-01
SCF-0370	The ECS shall have the capability to provide SCF with information about ECS Resource Usage during SCF-requested data processing.	V1-ICT-01
SCF-0370#A	The ECS shall have the capability to provide SCF with information about ECS Resource Usage during SCF-requested data processing.	V1-ICT-01
SCF-0370#B	The ECS shall have the capability to provide SCF with information about ECS Resource Usage during SCF-requested data processing.	V1-ICT-01
SCF-0380	The SCF shall have the capability to send a Request for Product History (including the algorithms used) to the ECS for the history of data products	V1-ICT-01

	that the SCF specifies.	
SCF-0380#A	The SCF shall have the capability to send a Request for Product History (including the algorithms used) to the ECS for the history of data products that the SCF specifies.	V1-ICT-01
SCF-0380#B	The SCF shall have the capability to send a Request for Product History (including the algorithms used) to the ECS for the history of data products that the SCF specifies.	V1-ICT-01
SCF-0390	The ECS shall have the capability to provide SCF with the Product History of data products that the SCF specifies.	V1-ICT-01
SCF-0390#A	The ECS shall have the capability to provide SCF with the Product History of data products that the SCF specifies.	V1-ICT-01
SCF-0390#B	The ECS shall have the capability to provide SCF with the Product History of data products that the SCF specifies.	V1-ICT-01
SDPS0010	The SDPS shall provide CSMS with operational, data processing, data quality and accounting status.	V1-SDP-05
SDPS0020	The SDPS shall receive EOS science, engineering, ancillary, and expedited data from the EDOS, the SDPF, and the IPs, and non-EOS data, in situ data, associated algorithms, documentation, correlative data, and ancillary data (as listed in Appendix C) from ADCs, EPDSs, and ODCs.	V1-SDP-05
SDPS0020#A	The SDPS shall receive EOS science, engineering, ancillary, and expedited data from the EDOS, and SDPF, and non-EOS ancillary data (as listed in Appendix C) from ADCs.	V1-ICT-06 V1-SDP-01
SDPS0021#A	SDPS0021 - The SDPS shall convert the following ancillary data sets from their native formats into internal formats to allow access by science algorithms: a. NMC GRIB formatted final analysis product b. NESDIS Snow/Ice Product in DEF format c. TOMS products (format currently unspecified)	V1-SDP-01
SDPS0025	The SDPS shall accept scientific and non-scientific investigator supplied dataset specific data transformations.	V1-SDP-05
SDPS0026	The SDPS shall provide the capability for performing dataset specific data	V1-SDP-05



	transformations.	
SDPS0030	The SDPS shall produce Standard Products (as listed in Appendix C, including prototype products on a time-available basis) for EOS instruments based on the algorithms source code and calibration coefficients supplied by EOS scientists.	V1-SDP-05
SDPS0031	The SDPS shall generate browse data and metadata for routing to the requesting users.	V1-SDP-05
SDPS0032	The SDPS shall provide the PIs and the other science users with the updated metadata for the assessment of data product quality.	V1-SDP-05
SDPS0035	The SDPS shall produce derived ancillary products as Standard Products for EOS investigators based on algorithms and coefficients for conversion, calibration, and transformation of selected engineering/housekeeping data parameters.	V1-SDP-05
SDPS0050	The SDPS shall archive, manage, quality check, and account for the generated data products, and distribute the data products to the appropriate destinations as required.	V1-SDP-05
SDPS0080	The SDPS shall archive, manage, quality check, and account for all science and ancillary data received from the IPs, the EPDSs, the SCFs, the ADCs, the ODCs, other DAACs, PIs and the other EOS science users.	V1-SDP-05
SDPS0085	The SDPS shall support data products transitioned from V0 at a level of service equal to or greater than the level of service provided for those same data products by V0. The level of service are defined in Appendix C of the ESDIS Project Level 2 Requirements, Volume 5 EOSDIS Version 0.	V1-SDP-05
SDPS0090	The SDPS shall interface with the PIs and the other science users to support the development and testing of data product algorithms and QA of produced data products.	V1-SDP-05
SDPS0091	The SDPS shall receive a quality report that is generated and transmitted by the PIs or the other science users, and appended to the data products being archived by the SDPS.	V1-SDP-05

SDPS0092	The SDPS shall support science user development of new search techniques that dynamically browse the data and metadata.	V1-SDP-05
SDPS0093	The SDPS shall permit general science user access to these new search techniques but limit system resource usage to 10% of the information management, data processing, archiving, and distribution resources otherwise used for production and distribution of Level 2 and Level 3 products.	V1-SDP-05
SDPS0094	SDPS processing resources used for the development or execution of science software for new search techniques shall be isolated to ensure no adverse impact to: a. the correct operation of ECS components b. system data integrity c. the ability of ECS to meet production and distribution schedules Note: It is assumed that new search techniques will be developed and installed by means of components separate from the ECS. All requests for data or services by the new search techniques are assumed to be already factored into the existing ECS request load described in this specification.	V1-SDP-05
SDPS0095	The SDPS shall provide science user interfaces that are individually tailorable including settable preferences, user defined keywords, query save capabilities, and screen layout preferences.	V1-SDP-05
SDPS0100	The SDPS shall be responsible for delivery of EOS data and data products to the IPs, the ADCs, the ODCs, and the other science users via EOSDIS networks and on a variety of physical media.	V1-SDP-05
SDPS0110	The SDPS shall be responsible for coordination of the transfer of production and quick-look science and engineering data from EDOS, SDPF, and the IPs.	V1-SDP-05
SDPS0120	The SDPS shall be capable of operating in a 24-hour a day, 7-day a week mode.	V1-SDP-05
SDPS0130	The SDPS shall provide the capability for DAACs to exchange data products, browse data, metadata, data quality	V1-SDP-05

	information, research results, and documentation.	
SDPS0140	The SDPS shall support element, system, and subsystem test activities throughout the development phase.	V1-SDP-05
SDPS0150	The SDPS shall assign priority and distribute expedited data and expedited data availability availability notices.	V1-SDP-05
SDPS0170	The SDPS shall accommodate growth in the instrument processing load and storage capacity without changes to the SDPS architecture or design.	V1-SDP-05
SDPS0220#B	In support of reducing production data dependency flow bandwidth consumption during inter-DAAC network transmission, the ECS shall support subsetting through swath width reduction by selection of a range of pixels from each swath row, for standard production as well as reprocessing.	V1-SDP-06
SDPS0230#B	In support of reducing production data dependency flow bandwidth consumption during inter-DAAC network transmission, the ECS shall support subsetting by spectral band(s) selection, for standard production as well as reprocessing.	V1-SDP-06
SMC-0340#A	The SMC shall have the capability of responding to system faults within a maximum of five minutes.	V1-SDP-01
SMC-0350#A	The SMC shall have the capability of responding to security compromises within a maximum of five minutes.	V1-SDP-07
SMC-1300#A	The SMC shall support and maintain the ECS policies and procedures regarding instrument and ground event scheduling, including, at a minimum: a. Mission and science guidelines b. Directives for scheduling instrument data ingest, processing, reprocessing, retrieval, and data distribution	V1-SDP-02 V1-SDP-03 V1-SDP-04
SMC-1330#A	The SMC shall support and maintain the information for end-to-end data ingest, processing, reprocessing, archive, and data distribution for each product, including, at a minimum: a. Product information b. Product generation information c. Product delivery information	V1-SDP-01 V1-SDP-02 V1-SDP-03 V1-SDP-04
SMC-1345#A	The LSM shall perform priority management services to resolve conflicts for ECS resources.	V1-SDP-04
SMC-3335#A	The LSM shall compare and evaluate its elements actual schedule performance against planned schedule performance.	V1-SDP-04
SMC-3340#A	The SMC shall perform quality assurance for the overall ECS performance as well as programmatic areas that include, at a minimum:	V1-SDP-02

	<ul style="list-style-type: none"> <li>a. System quality testing, benchmarks, and audits for system enhancement implementations</li> <li>b. System quality checking and audits of products processed and delivered</li> <li>c. Quality testing and audits of site and element resource performance.</li> </ul>	
SMC-3345#A	<p>The LSM shall perform quality assurance for its site/elements performance as well as programmatic areas that includes, at a minimum:</p> <ul style="list-style-type: none"> <li>a. Quality testing, benchmarks and audits for element enhancement implementations</li> <li>b. Quality checking and audits of products processed and delivered</li> <li>c. Quality testing and audits of element resource performance,</li> </ul>	V1-SDP-02
SMC-3350#A	<p>The SMC shall generate, maintain, and update performance criteria and responses to performance deficiencies for system, site, and element resources and activities, such as:</p> <ul style="list-style-type: none"> <li>a. Data collection</li> <li>b. Product generation, QA and validation</li> <li>c. Reprocessing</li> <li>d. Data delivery to DAACs and to users</li> <li>e. Response to user requests</li> <li>f. Response to TOOs</li> <li>g. Response to field experiments</li> <li>h. Response to emergency situations</li> </ul>	V1-SDP-01 V1-SDP-02 V1-SDP-04
SMC-3385#A	The LSM shall evaluate system performance against the ESDIS project established performance criteria.	V1-SDP-02
SMC-3390#A	The SMC shall generate alert indicators of fault or degraded conditions with the corrective actions.	V1-SDP-01
SMC-3395#A	The LSM shall generate, in response to each limit check threshold, alert indicators of fault or degraded conditions.	V1-SDP-01
SMC-4315#A	The LSM shall, at a minimum, isolate, locate, and identify faults, identify subsystem, equipment, and software faults, and identify the nature of the faults within its element.	V1-SDP-01
SMC-4335#A	The LSM shall generate fault recovery commands, directives, and instructions within its element.	V1-SDP-01
SMC-5305#A	<p>The LSM shall maintain security policies and procedures, including, at a minimum:</p> <ul style="list-style-type: none"> <li>a. Physical security</li> <li>b. Password management</li> <li>c. Operational security</li> <li>d. Data classifications</li> <li>e. Access/privileges</li> <li>f. Compromise mitigation</li> </ul>	V1-SDP-03 V1-SDP-07
SMC-5320#A	The SMC shall establish, maintain, and authenticate access	V1-SDP-03

	privileges for ECS scientific users.	
SMC-5325#A	The LSM shall promulgate, maintain, authenticate, and monitor user and device accesses and privileges.	V1-SDP-03
SMC-5330#A	The SMC shall provide support, manage, maintain, and request security testing that includes, at a minimum, password checking and control of site and element internal privileges.	V1-SDP-03 V1-SDP-07
SMC-5335#A	The LSM shall perform security testing that includes, at a minimum, password auditing and element internal access/privileges checking.	V1-SDP-03 V1-SDP-07
SMC-5340#A	The SMC shall perform security risk analyses and compromise detection.	V1-SDP-07
SMC-5345#A	The LSM shall perform compromise (e.g., virus or worm penetration) risk analysis, and detection.	V1-SDP-07
SMC-5350#A	The SMC shall have the capability to initiate recovery procedures in response to a detected security compromise.	V1-SDP-07
SMC-5355#A	The LSM shall isolate the compromised area, detach the compromised input I/O, and the compromised areas output I/O until the compromise has been eliminated.	V1-SDP-07
SMC-5365#A	The LSM shall generate recovery actions in response to the detection of compromises.	V1-SDP-07
SMC-7300#A	The SMC shall establish, maintain, and update the authorized users inventory to include, at a minimum: a. Users identifications b. Addresses c. Allowed privileges	V1-SDP-07
SMC-8880#A	The SMC shall have the capability to generate detailed and summary security compromise reports indicating security compromises of ground resources and facilities, including, at a minimum: a. Security compromise type and description b. Time of occurrence c. Cause of security compromise d. Impact on system e. Status of security compromise resolution f. Security compromise statistics g. Results of security compromise risk analysis	V1-SDP-07
TRMM1010	The ECS systems at the LaRC DAAC shall ingest CERES Level 0 and quick-look data sets from SDPF.	V1-ICT-06
TRMM1030	The SDPF Level 0 and quick-look data sets for CERES shall contain quality and accounting information.	V1-ICT-06
TRMM1040	The SDPF Level 0 and quick-look data sets for CERES shall contain a detached SFDU header.	V1-ICT-06

TRMM1050	SDPF shall send a notification to the ECS systems at the LaRC DAAC upon availability of CERES Level 0 production or quick-look data.	V1-ICT-06
TRMM1060	The ECS systems at the LaRC DAAC shall, after notification by SDPF, retrieve CERES Level 0 production and quick-look data by an agreed-upon file transfer protocol.	V1-ICT-06
TRMM1070	The ECS systems at the LaRC DAAC shall ensure that CERES data has been received and validated.	V1-ICT-06
TRMM1080	The ECS systems at the LaRC DAAC shall acknowledge successful receipt of a CERES data set to the SDPF.	V1-ICT-06
TRMM1090	Upon the ECS systems at the LaRC DAAC discovering an unprocessable data set during validation, the ECS and SDPF personnel shall assess the need for regeneration.	V1-ICT-06
TRMM1100	SDPF shall regenerate/reprocess CERES Level 0 data for the ECS systems at the LaRC DAAC, for recovery purposes, as negotiated in order to avoid impacting SDPF support for on-orbit spacecraft.	V1-ICT-06
TRMM1110	SDPF shall provide a CERES Level 0 data set to the ECS systems at the LaRC DAAC once per day within 24 hours of the last acquisition session.	V1-ICT-06
TRMM1120	The SDPF shall retain CERES Level 0 data sets for five (5) days.	V1-ICT-06
TRMM1130	The ECS systems at the LaRC DAAC shall receive CERES scheduled quick-look from SDPF 3 times per day plus occasional special quick-look data sets.	V1-ICT-06
TRMM1140	A CERES quick-look data set shall contain data received during a single spacecraft contact.	V1-ICT-06
TRMM1150	SDPF shall notify the ECS systems at the LaRC DAAC of availability of a CERES quick-look data set within 2 hours of the end of the acquisition session.	V1-ICT-06
TRMM1160	CERES special quick-look data collection and processing shall be scheduled with SDPF by human interaction.	V1-ICT-06
TRMM1170	Data collected and processed for CERES solar calibration shall be	V1-ICT-06

	scheduled by human interaction.	
TRMM1180	ECS shall be able to process SDPF Level 0 and quick-look data sets in SDPF-defined format.	V1-ICT-06
TRMM1190	SDPF shall retain CERES raw data for 2 years.	V1-ICT-06
TRMM1195	SDPF shall send a notification to the ECS systems at the LaRC DAAC upon availability of predictive or definitive orbit data.	V1-ICT-06
TRMM1200	The ECS systems at the LaRC DAAC shall ingest predicted orbit data from the SDPF.	V1-ICT-06
TRMM1210	The ECS systems at the LaRC DAAC shall ingest definitive orbit data from the SDPF.	V1-ICT-06
TRMM1280	ECS shall be able to accept CERES simulated data from SDPF.	V1-ICT-06
TRMM2010	The ECS systems at the MSFC DAAC shall ingest LIS data from SDPF.	V1-ICT-06
TRMM2030	The SDPF Level 0 and quick-look data sets for LIS shall contain quality and accounting information.	V1-ICT-06
TRMM2040	The SDPF Level 0 and quick-look data sets for LIS shall contain a detached SFDU header.	V1-ICT-06
TRMM2050	SDPF shall send a notification to the ECS systems at the MSFC DAAC upon availability of LIS Level 0 production or quick-look data.	V1-ICT-06
TRMM2060	The ECS systems at the MSFC DAAC shall, after notification by SDPF, retrieve LIS Level 0 production and quick-look data by an agreed upon file transfer protocol.	V1-ICT-06
TRMM2070	The ECS systems at the MSFC DAAC shall ensure that LIS data has been received and validated.	V1-ICT-06
TRMM2080	The ECS systems at the MSFC DAAC shall acknowledge successful receipt of a LIS data set to the SDPF.	V1-ICT-06
TRMM2090	Upon the ECS operations at the MSFC DAAC discovering an unprocessable data set during validation, the ECS and SDPF personnel shall assess the need for regeneration.	V1-ICT-06
TRMM2100	SDPF shall regenerate/reprocess LIS Level 0 data for the ECS systems at the MSFC DAAC, for recovery purposes, as negotiated in order to avoid impacting SDPF support for on-orbit spacecraft.	V1-ICT-06
TRMM2110	SDPF shall provide a LIS Level 0 data set to the ECS systems at the MSFC DAAC once per day within 24 hours of the last acquisition.	V1-ICT-06
TRMM2120	SDPF shall retain retrieved LIS Level 0 data sets for five (5)	V1-ICT-06

	days.	
TRMM2130	The ECS systems at the MSFC DAAC shall receive LIS scheduled quick-look from SDPF 3 times per day plus occasional special quick-look.	V1-ICT-06
TRMM2140	A LIS quick-look data set shall contain data received during a single spacecraft contact.	V1-ICT-06
TRMM2150	SDPF shall notify the ECS systems at the MSFC DAAC of availability of a LIS quick-look data set within 2 hours of the end of the acquisition session.	V1-ICT-06
TRMM2160	LIS special quick-look data collection and processing shall be scheduled with SDPF by human interaction.	V1-ICT-06
TRMM2170	ECS shall be able to process LIS Level 0 and quick-look data sets in SDPF-defined formats.	V1-ICT-06
TRMM2180	SDPF shall retain LIS data for 2 years.	V1-ICT-06
TRMM2185	SDPF shall send a notification to the ECS systems at the MSFC DAAC upon availability of predictive or definitive orbit data.	V1-ICT-06
TRMM2190	The ECS systems at the MSFC DAAC shall ingest predicted orbit data from the SDPF.	V1-ICT-06
TRMM2200	ECS systems at the MSFC DAAC shall ingest definitive orbit data from the SDPF.	V1-ICT-06
TRMM2270	ECS shall be able to accept LIS simulated data from SDPF.	V1-ICT-06
TRMM3010#A	The ECS systems at the MSFC DAAC shall ingest TRMM standard products (Level 1A - 3B) for PR and TMI from TSDIS.	V1-ICT-07
TRMM3030#A	The ECS MSFC DAAC shall ingest TRMM browse products for PR and TMI from TSDIS.	V1-ICT-07
TRMM3040#A	The ECS systems at the MSFC DAAC shall ingest algorithms and documentation for PR and TMI from TSDIS.	V1-ICT-07
TRMM3050#A	The ECS systems at the MSFC DAAC shall ingest TRMM Ground Validation (GV) data products and associated metadata from TSDIS.	V1-ICT-07
TRMM3060#A	The PR, TMI, and GV data ingested from TSDIS by ECS shall be archived in the ECS systems at the MSFC DAAC.	V1-ICT-07
TRMM3070#A	The ECS systems at the MSFC DAAC shall ingest TRMM data files and data products, including metadata, daily.	V1-EGS-04
TRMM3080#A	TSDIS shall electronically provide a schedule of TRMM product delivery to the ECS systems at the MSFC DAAC.	V1-ICT-07
TRMM3090#A	TSDIS shall electronically provide status information to the	V1-ICT-07



	ECS systems at the MSFC DAAC about delayed products.	
TRMM3100#A	ECS shall make daily deliveries of an average of 2-days worth of archived TRMM PR, TMI, GV, and SSM/I ancillary data to TSDIS for the purpose of reprocessing by TSDIS. ECS also shall daily ingest an average of 2-days worth of reprocessed data from TSDIS.	V1-ICT-07
TRMM3110#A	TRMM shall make a standing order to ECS for SSM/I data to be delivered from the ECS systems at the MSFC DAAC to TSDIS.	V1-ICT-07
TRMM3120#A	Communications between TSDIS and the ECS systems at the MSFC DAAC to transport the PR, TMI, and GV standard products, metadata, SSM/I ancillary data, algorithms, and documentation shall be provided by ESDIS.	V1-ICT-07
TRMM3130#A	All data transferred between TSDIS and the ECS systems at the MSFC DAAC, including GV, shall follow ESDIS-defined standards with specific product formats to be jointly agreed to and documented in ICDs.	V1-ICT-07
TRMM4010#A	The ECS systems at the GSFC DAAC shall ingest TRMM standard products (Level 1A - 3B) for VIRS from TSDIS.	V1-ICT-07
TRMM4030#A	The ECS systems at the GSFC DAAC shall ingest TRMM browse products for VIRS from TSDIS.	V1-ICT-07
TRMM4040#A	The ECS systems at the GSFC DAAC shall ingest from TSDIS algorithms and documentation for VIRS.	V1-ICT-07
TRMM4050#A	The VIRS data ingested from TSDIS by ECS shall be archived at the ECS systems at the GSFC DAAC.	V1-ICT-07
TRMM4060#A	The ECS systems at the GSFC DAAC shall ingest TRMM data files and data products, including metadata, daily.	V1-EGS-04
TRMM4070#A	TSDIS shall electronically provide a schedule of TRMM product delivery to the ECS systems at the GSFC DAAC.	V1-ICT-07
TRMM4080#A	TSDIS shall electronically provide status information to the ECS systems at the GSFC DAAC about delayed products.	V1-ICT-07
TRMM4090#A	ECS shall make daily deliveries of an average of 2-days worth of archived TRMM VIRS, GOES Precipitation Index (GPI), Global Precipitation Climatology Project (GPCP), and National Meteorological Center (NMC) ancillary data to TSDIS for the purpose of reprocessing by	V1-ICT-07

	TSDIS. ECS shall also daily ingest an average of 2-days worth of reprocessed data from TSDIS.	
TRMM4100#A	TSDIS shall make a standing order to ECS for AVHRR, GPI, GPCP, and NMC ancillary data to be delivered from the ECS systems at the GSFC DAAC to TSDIS.	V1-ICT-07
TRMM4110#A	Communications between TSDIS and the ECS systems at the GSFC DAAC to transport the VIRS standard products, metadata, GPI, GPCP, and NMC ancillary data, and algorithms and documentation shall be provided by ESDIS.	V1-ICT-07
TRMM4130#A	All data transferred between TSDIS and ECS systems at the GSFC DAAC shall follow ESDIS-defined standards, with specific product formats to be jointly agreed to and documented in ICDs.	V1-ICT-07
TRMM5010#A	ECS shall ingest TRMM metadata, and browse from TSDIS along with the TRMM standard products in the ECS format.	V1-EGS-04
TRMM5010#A	ECS shall ingest TRMM metadata, and browse from TSDIS along with the TRMM standard products in the ECS format.	V1-ICT-07
TRMM5020#A	Availability of TRMM data products (PR, VIRS, TMI, and GV) shall be based on the TSDIS product schedule, and an electronic status mechanism shall be available for late products.	V1-EGS-04
TRMM5020#A	Availability of TRMM data products (PR, VIRS, TMI, and GV) shall be based on the TSDIS product schedule, and an electronic status mechanism shall be available for late products.	V1-ICT-07
TRMM5030#A	ECS shall have the capability to ingest directory and guide information from TSDIS.	V1-EGS-04
TRMM5030#A	ECS shall have the capability to ingest directory and guide information from TSDIS.	V1-ICT-07
TRMM5040#A	ECS shall have the capability to archive and distribute standard TRMM data files and products (including VIRS, PR and TMI data, metadata, GV data, algorithms and documentation) as provided and produced by TSDIS	V1-EGS-04

	and the TRMM Science Team.	
TRMM5040#A	ECS shall have the capability to archive and distribute standard TRMM data files and products (including VIRS, PR and TMI data, metadata, GV data, algorithms and documentation) as provided and produced by TSDIS and the TRMM Science Team.	V1-ICT-07
TRMM5050#A	TRMM shall support maintenance of a TRMM user model for use in the overall ECS user model.	V1-EGS-04
TRMM5060#A	ECS shall provide standard information management functions for browse, and order of data and products provided by TSDIS and delivered to the MSFC and GSFC DAACs (including VIRS, PR and TMI data, metadata, GV data, TRMM Science Team algorithms and documentation).	V1-EGS-04 V1-ICT-07
TRMM5070#A	ECS will continue to archive original TRMM standard products (Level 1B-3) after reprocessing for 6 months, after which the products will become eligible for deletion.	V1-EGS-04
TRMM5100#A	ECS shall provide products status for TRMM products to users based upon ECS holdings. Status also shall be based on the TRMM schedule provided electronically by TSDIS and an interactive status mechanism for late products.	V1-EGS-04 V1-ICT-07
TRMM8010#A	TRMM shall manage, and ESDIS shall support, the TRMM end-to-end system testing of the interfaces between ECS and TRMM.	V1-EGS-04
TRMM8071#A	ECS shall support all dataflows and archival and distribution functionality for integration and test with the TRMM ground system.	V1-EGS-04
TRMM8090#A	ECS shall archive and distribute TRMM algorithms and documentation in support of test and integration of interfaces with TSDIS.	V1-EGS-04
TRMM8100	ECS shall process CERES and LIS Level 0 and quick-look data sets received from SDPF for early interface testing.	V1-ICT-06
TRMM8110#A	The TSDIS elements shall be capable of processing simulated TRMM instrument data in support of pre launch checkout of the interfaces with ECS.	V1-EGS-04

TRMM8120	ESDIS shall coordinate provision of LIS and CERES simulated instrument data and instrument data parameters to SDPF in support of integration and test.	V1-ICT-06
----------	--	-----------

## Appendix B - Sample Data Collection Forms

EGS I&T PROGRAM MONTHLY SUMMARY FORM	
Name: _____	
Project/Release: _____ Date: _____	
Confidence Test Package: _____	
TEST PLANNING STATUS	
Number of interface tests generated this month	
Number of interface tests generated to date	
Number of interface tests planned (in baseline test plan)	
Number of component tests generated this month	
Number of component tests generated to date	
Number of component tests planned (in baseline test plan)	
Number of EGS system level tests generated this month	
Number of EGS system level tests generated to date	
Number of EGS system level tests planned (in baseline test plan)	
Number of test data files received this month	
Number of test data files received to date	
Number of test data files required	
SCHEDULE AND REQUIREMENT TRACKING	
Number of Level 4 schedule changes this month	
Number of Level 4 schedule changes to date	
Number of Level 3 requirement changes this month	
Number of Level 3 requirement changes to date	

EGS I&T DAILY TEST SUMMARY FORM			
Name: _____			
Project/Release: _____ Date: _____			
TESTING STATUS			
Number of interface test cases executed at least once			
Number of interface test cases successfully executed			
Number of interface test cases failed execution			
Number of component test cases executed at least once			
Number of component test cases executed successfully tested			
Number of component test cases executed failed testing			
Number of EGS system test cases executed at least once			
Number of EGS system test cases executed successfully tested			
Number of EGS system test cases executed failed testing			
Number of joint tests participated in at least once			
Number of joint test participated in successfully			
Number of joint test participated in failed			
Total number of interface tests successfully executed			
Total number of interface tests in baseline test procedures			
Total number of component tests successfully executed			
Total number of component tests in baseline test procedures			
Total number of EGS system tests successfully executed			
Total number of EGS system tests in baseline test procedures			
DISCREPANCY TRACKING STATUS			
Severity 1's (critical)		Total number of DR's written to date	
Severity 2's (urgent)		Total number of DR's resolved by HITS	
Severity 3's (routine)		Total number of DR's verified to date	
Number of DR's written			
TEST CASE/DATA CHANGE STATUS			
Changes to Test Cases		Changes to Test Data Files	
Test Case	Number of Changes	Test Data File	Number of Changes

*EGS Integration and Test Program Plan*







## Appendix C - Acronyms and Abbreviations

ADC	Affiliated Data Center
AOS	ASTER Operations Segment
ASTER	Advanced Spaceborne Thermal Emission and Reflection Radiometer
CCR	Configuration Change Request
CCSDS	Consultative Committee for Space Data Systems
CMD	Command
CODA	Customer Operations Data Accounting
COTS	Commercial Off-The-Shelf
CPT	Comprehensive Performance Test
DAA	Data Availability Acknowledgment
DAAC	Distributed Active Archive Center
DAN	Data Availability Notice
DAO	Data Assimilation Office
DAR	Data Acquisition Request
DDA	Data Delivery Acknowledgment
DDF	Data Distribution Facility
DR	Discrepancy Report
DRTT	Discrepancy Report Tracking Tool
DSN	Deep Space Network
EBnet	EOSDIS Backbone Network
EDS	Expedited Data Set
ECS	EOSDIS Core System
EDC	EROS Data Center
EDOS	EOS Data and Operations System
EDU	EDOS Data Units
ECT	EOC Compatibility Test
EGS	EOS Ground System
EOC	EOS Operations Center
EOS	Earth Observing System
EOSDIS	Earth Observing System Data and Information System
ESDIS	Earth Science Data and Information System
ETE	End-to-End
ETS	EOSDIS Test System
EU	Engineering Unit
F&PR	Functional and Performance Requirement
FDF	Flight Dynamics Facility
FOT	Flight Operations Team

GDS	Ground Data System
GN	Ground Network
GPCP	Global Precipitation Climatology Project
GPI	Global Precipitation Index
GSFC	Goddard Space Flight Center
GV	Ground Validation
H/K	Housekeeping
I&T	Integration and Test
ICC	Instrument Control Center (ECS) (ASTER)
ICD	Interface Control Document
ICT	Interface Confidence Test
IMS	Information Management Service
IPT	Integrated Product Team
IST	Instrument Support Terminal
IT	Instrument Team
LaRC	Langley Research Center
LPS	Landsat 7 Processing System
LTIP	Long-Term Instrument Plan
LTSP	Long-Term Science Plan
M&O	Maintenance and Operations
MOM	Mission Operations Managers
MRTT	Mission Readiness Test Team
MTPE	Mission to Planet Earth
NASA	National Aeronautics and Space Administration
NCC	Network Control Center
NMC	National Meteorological Center
NOAA	National Oceanic Atmospheric Administration
OBC	On Board Computer
P&S	Planning and Scheduling
PDS	Production Data Set
QA	Quality Assurance
RTM	Requirements and Traceability Management
RFSOC	Radio Frequency Simulation Operation Center
S/C	Spacecraft
SCF	Science Computing Facility

SCS	Spacecraft Session
SDPF	Science Data Processing Facility
SDP	Science Data Processing
SIM	Simulation
SOM	Science Operations Manager
SMC	System Monitoring and Coordination Center
SN	Space Network
SSIM	Spacecraft Simulator
SSO	Science Systems and Operations
SSR	Solid State Recorder
SYS-IPT	Systems Integrated Product Team
TBR	To Be Resolved
TBS	To Be Supplied
TCP/IP	Transmission Control Protocol/Internet Protocol
TDM	Test Data Management
TDRSS	Tracking and Data Relay Satellite System
TICTOC	Test Integration & Certification Test Oversight Committee
TLM	Telemetry
TRMM	Tropical Rainfall Measuring Mission
TSDIS	TRMM Science Data and Information System
TSU	TRMM Science User
WOTS	Wallops Orbital Tracking System